LT250

Digital Wireless Intercom System Operating Instructions

2013. 10. 15. Rev2.0

LAON
Technology Co., Ltd.

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IMPORTANT SAFETY INFORMATIONS

1. For LT250 systems, to reduce the risk of electric shock, explosion or fire;
   - Use only the supplied AC power adapter
   - Do not disassemble the product
   - Avoid contact with liquids besides the permitted certain equipments.
   - Use only the proper type of battery and rechargeable battery supplied by the manufacturer.

2. Battery Safety and Cautions
   - Do not charge with any other AC power adapter or charger.
   - Do not burn, disassemble, bend or short-circuit the battery.
   - Dispose of used up battery promptly and safely according to local regulations.
   - Keep battery away from children.
   - Do not short the metal contacts with electrically conducting material such as bracelets, keys, and etc.
   - Recommended battery storage temperature is -20 °C to 30°C for less than 1 year, -20°C to 40°C for less than 90 days, -20 °C to 50°C for Less than 30 days.
   - Recommended Battery charging temperature is 0°C to 40°C
   - Do not burn or expose batteries to excessive heat such as sunshine or other heat sources
   - When using alkaline or other maker's rechargeable batteries other than LAON provided rechargeable batteries, LTWI-BAT50 and LTWI-BAT150, use the same batteries as packaged by the makers for the same specifications, related current and voltage. In case of using non-LAON provided rechargeable batteries, use the maker designated battery charger. Two or Four batteries to be used together by putting into the Battery Sled of LAON products should be managed to have the same residual time, life and recharged with same cycles. Using batteries together with different specifications and natures may cause damages on inner parts of the applicable LAON product and affect battery operating time.

3. Antenna Safety and Cautions
   - Use only manufacturer supplied antennas.
   - Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation. The antenna should not be contacted during operation. The minimum separation distance of 7.9 inches (20 cm) from the antenna to the body of user required.

LT250 system operates in the 5GHz UNII band frequency range. LT250 system is approved for license free use in most countries. There may be restrictions on the use of some bands or RF spectrum operations in some countries. Therefore, it is your responsibility to confirm with the designated authorizer in your local area whether the equipments of the LT250 system approved to use in your country or not.

NOTICE

Illustrations, figures and images of this publication are only for explaining equipment's operations and functions and may roughly reflect the actual equipment.

Contact the designated distributors or retailers to avoid erroneous interpretations or language translations that may cause equipment malfunctioning.

The information herein, including but not limited to, illustrations, figures and images subject to change without prior notice and shall not be interpreted as an expressed or implied commitment on LAON Technology's part.

With due respect, LAON Technology, the manufacturer of the equipment does not provide any expressed or implied warranty to anything included in this operating instruction and shall have no legal responsibility for any implied warranties of suitableness for a specific application or for any special, indirect, or consequential damages.

LAON Technology may update this publication at its own discretion.

SECTION 1: INTRODUCTION

LAON Technology ('LAON') is a leading-edge technology developer and innovative solutions provider in Digital Wireless Audio Communications and Wireless Intercom Systems.

LOAN's digital wireless Intercom System, LT250 operates in license-free 5GHz UNII band securing high performance wireless coverage and scalability. And LAON's technologies such as non-compressed audio transmissions, triple diversity (3D), noise cancelling and automatic interference avoidance realized to enable our high standard intercom users to experience break-up free audio communications. LT250 provides a full flexibility on grouping allowing up to three (3) communication group channels to be allocated with up to nine (9) full-duplex audio paths – eight (8) channels for Belt Pack and 1 (one) channel for Base Station. It also maintains the audio clarity high in quality even in noisy environments and guarantees private and secured communications by AES 256bit Level-3 encryption. More details to be followed;

Up to 32 Belt Packs can be paired up with each Base Station in the normal mode and additional 96 Belt Packs can be paired up under the shared mode. Those Belt Packs under the shared mode operate only in 'Push-to-Talk' mode. 32 Belt Packs with which have been paired up with Base Station in the normal mode can be monitored, and additional 96 Belt Packs with which have been paired up in the shared mode cannot be monitored at the Base Station.

Up to three (3) communication groups, single or multiple, can be allocated and configured flexibly to the Base Station, Belt Pack and Auxiliary input/output. The communication group allocation to Belt Packs, Auxiliary input/output and the Base Station itself can be set each by the Base Station operator using the Base Station menus.

As shown from the figure, 'Communication group allocation' of the System Usage Example below, for instance, you may allocate only one group to Belt Pack # 1 (Group # 1 for BP1), two groups to Belt Pack # 3 (Group # 1 & 2 for BP3) and all the three (3) groups to Base Station (Group # 1, 2 & 3 for Base Station).

Belt Packs and other devices in the same communication group can talk with others in the designated group. The selected communication group is displayed on the NORMAL menu of the Belt Pack as "1" through "3".

Base Station and Auxiliary devices can communicate at the same time with all the groups allocated up to three (3). The selected communication group is displayed on the NORMAL menu of the Base Station as "1" through "3" and "A".

Remote Base Station (RBS) can be connected to the Base Station through LAN, composing customized and continuous coverage, and enabling automatic roaming between coverage zones. The Remote Base Station supports the communications with Belt Packs in remote area from the Base Station and shares up to nine (9) full duplex audio paths with the Base Station within the coverage area. Standard CAT-5 cable is used to connect the Remote Base Station either directly to the LAN port on the rear panel of the Base Station, or via network switch. Remote Base Station can be powered by local electricity or network switching devices which has the Power-over-Ethernet (POE) function. Due to network traffic delay, audio breakups might occur in communications between Belt Packs in the Remote Base Station coverage, or in communications with Belt Packs which are connected to the Base Station. In that case, it is recommended to compose the network exclusively.

OLED displays on the front panel of the Base Station and Belt Pack are for setting up operations and monitoring. The Base Station can monitor connectivity status among the Base Station, Remote Base Station and Belt Packs. Moreover, the Base Station can monitor each Belt Pack's Received Signal Strength Indication (RSSI) level, battery level and microphone gain.

The USB port on the rear panel of the Base Station is supposed to be used for communication with PC to exchange data and update programs.

Audio latency is one of the most critical factors in all digital wireless system. LT250 realized low latency, less than 23msec for total one-way system latency from the Belt Pack to the Base Station.

Up to five Belt Packs and two Belt Pack Batteries can be charged at the same time by Battery Charger (BATCHG125). You can use rechargeable Battery Pack (BAT50) or two AA 1.5V alkaline batteries in the Belt Pack.

LT250 Digital Wireless Intercom System powered by LAON's leading edge technology provides not only high quality audio performance but reliable coverage, diverse functions and flexibilities.

SYSTEM USAGE EXAMPLE

COMMUNICATION GROUP ALLOCATION

Up to three (3) communication groups can be allocated flexibly to the various devices.
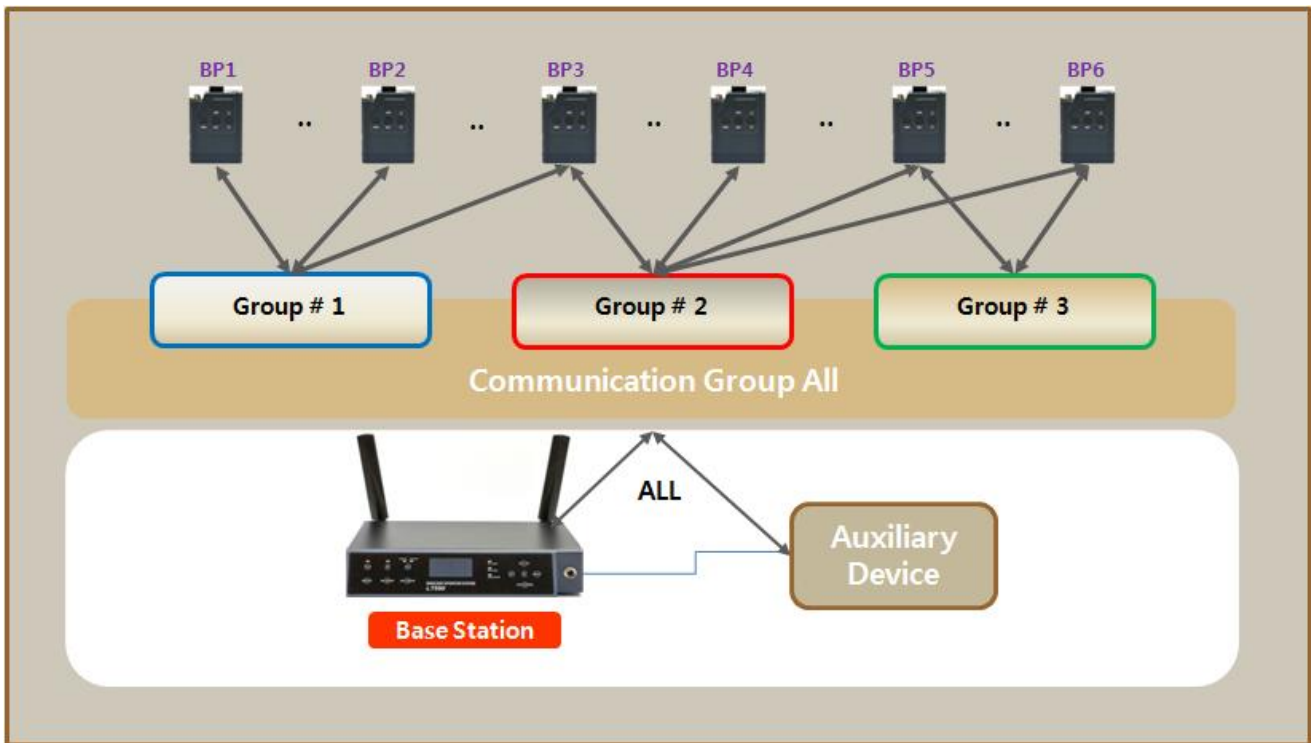
SYSTEM USAGE OF THE STAND-ALONE OPERATION
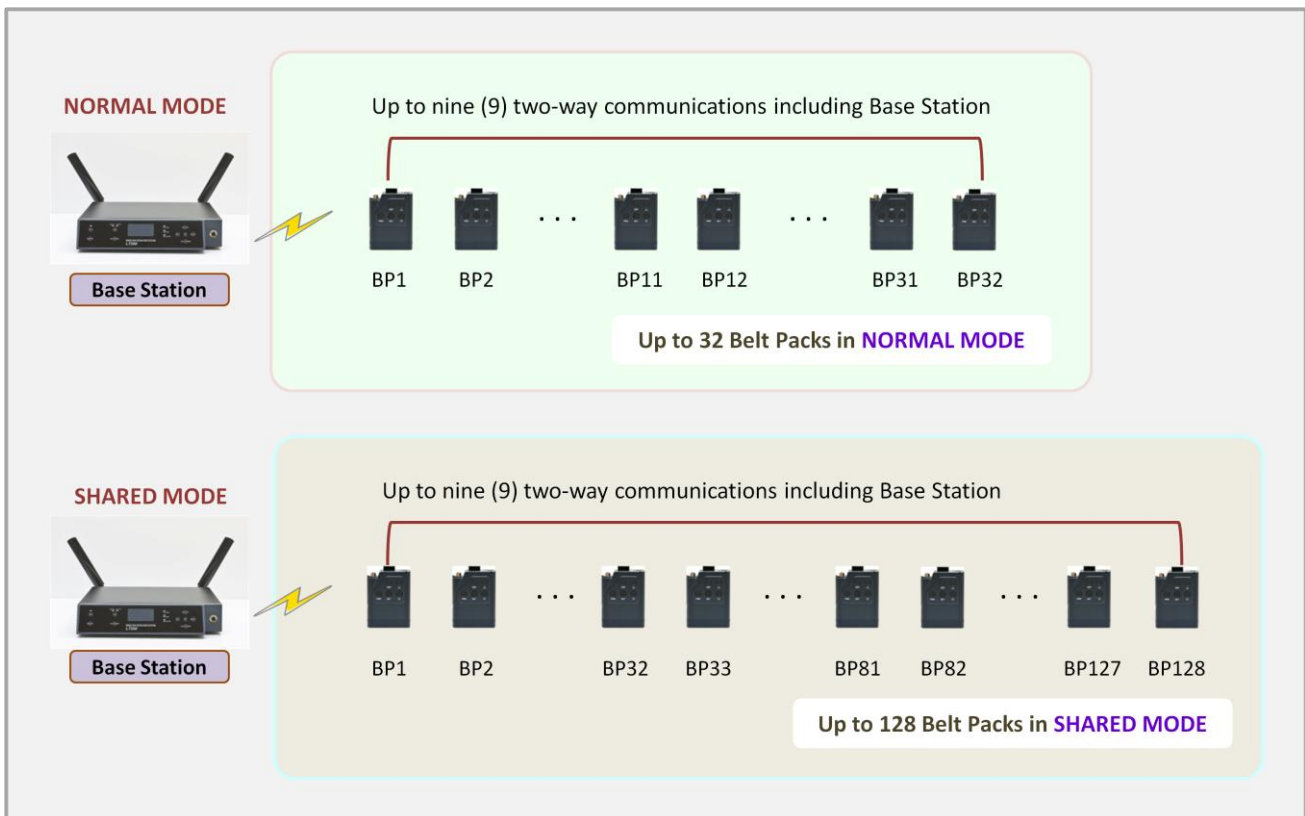
SYSTEM USAGE WITH THE REMOTE BASE STATION
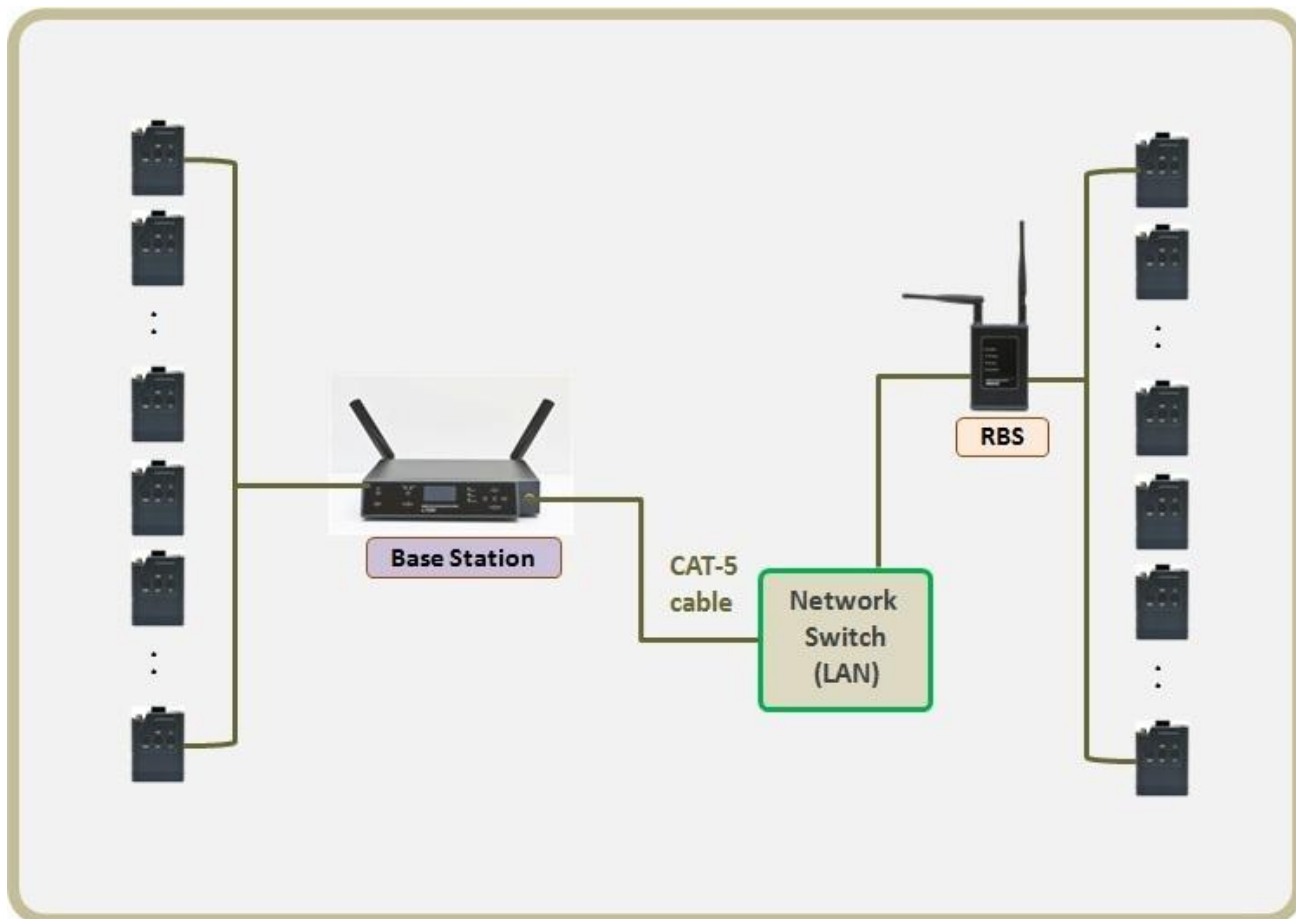
NOTE: It is recommended to compose the network exclusively due to the variable network environment.

SECTION 2: PRODUCT OVERVIEW

LT250 SYSTEM EQUIPMENTS

The followings are basic L250 Wireless Intercom System equipments.

BS250 BASE STATION EQUIPMENTS

BS250 Base Station

AC power supply

Base Station antennas
(Two per Base Station)

Wall-mount bracket (optional)

BP250 BELT PACK EQUIPMENTS

BAT50 Rechargeable
Battery Pack (Optional)

Battery sled

BP250 Belt Pack

NOTE: BAT50 is not included in basic BP250 equipment.

OPTIONAL EQUIPMENTS

BATCHG125 BATTERY CHARGER EQUIPMENTS

BATCHG125 Battery Charger

AC Power Supply

HEADSETS

LSH-S12

LMH-12

LMH-10

LMH-8

NOTE: Headsets are designated to use for LAON Technology's wireless intercom systems only.
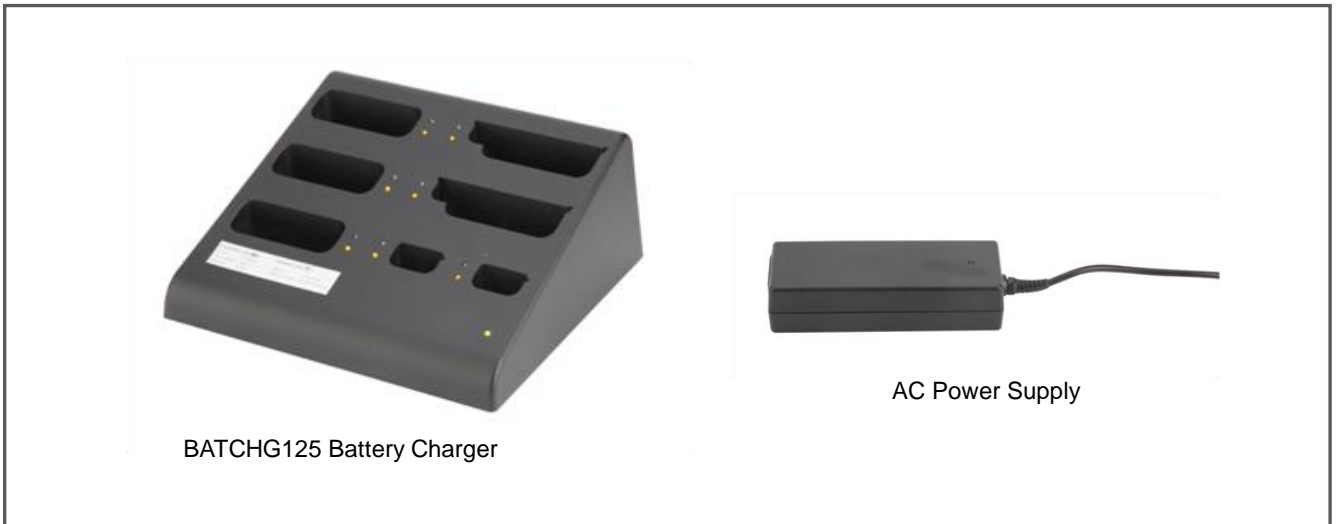
RBS25 REMOTE BASE STATION EQUIPMENTS

RBS25
Remote Base Station

RBS antennas
(Two per RBS)

AC Power Supply

BAT150 Rechargeable battery
(Optional)

Battery sled

Pouch for wall mount

NOTE: BAT150 is not included in basic RBS25 equipment.

EQUIPMENTS OVERVIEW

BS250 BASE STATION OVERVIEW

Figure 2-1. Front panel of the Base Station

1. Headset TALK button with indicator light
2. Headset communication group button
3. AUX IN, AUX IN/OUT button   with indicator light
4. AUX IN, AUX IN/OUT communication group button
5. RF ALERT indicator light
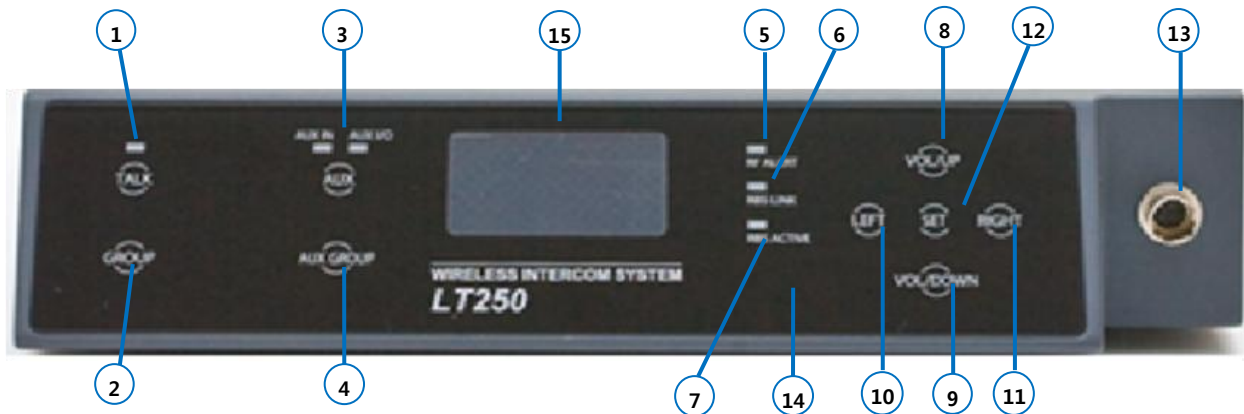6. Remote Base Station LINK Indicator light
7. Remote Base Station ACTIVE indicator light
8. Headset speaker volume control (UP)/
   Menu selection button

9. Headset speaker volume control (DOWN)/
   Menu Selection button
10. Menu selection button (LEFT)
11. Menu selection button (RIGHT)
12. Menu SET button
13. Headset cable connector (Receptacle)
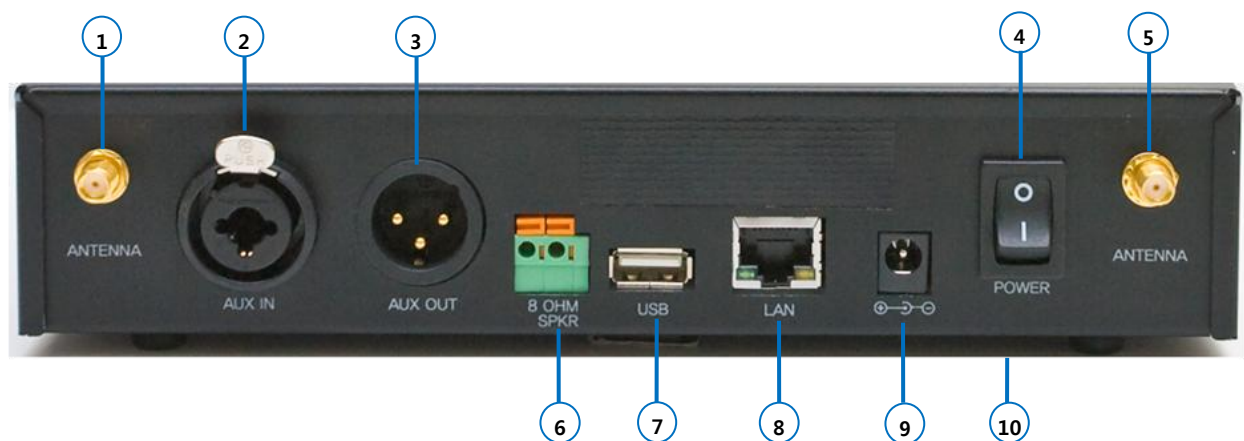14. Hands Free/PTT mode selection button
15. OLED Display

Figure 2-2. Rear panel of the Base Station

1. Antenna connector
2. AUX IN connector
3. AUX OUT connector
4. Power switch
5. Antenna connector

6. 8-OHM speaker 2-pin spring clamp connector
7. USB connector
8. LAN RJ-45 connector
9. POWER connector
10. Wall-mount bracket holder (on the bottom)

BP250 BELT PACK OVERVIEW

BP250 Belt Pack is moisture resistant which is excellent in using under humid environment.
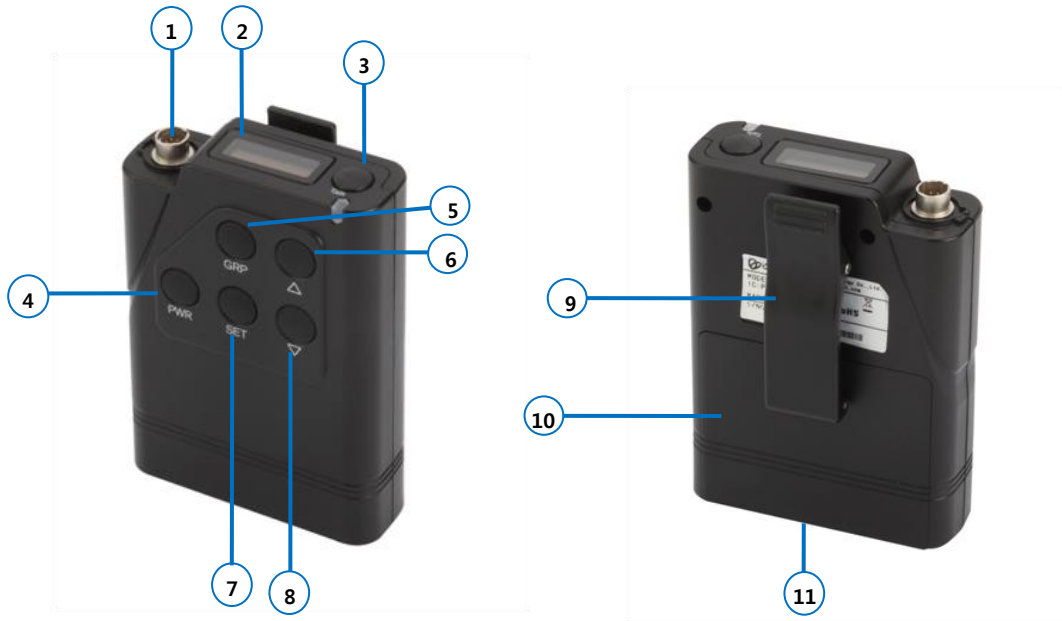
Figure 2-3. Panels of the Belt Pack

1. Headset cable connector (Receptacle)
2. OLED display
3. Headset TALK button with indicator light
4. Power (PWR) button
5. Headset communication group (GRP) button
6. Headset speaker volume control (UP) /
    Menu selection button

7. Menu SET button
8. Headset speaker volume control (DOWN) /
    Menu selection button
9. Belt clipper
10. Battery cover
11. Charger terminals (Bottom of the Belt Pack)

BELT PACK CHARGER TERMINAL SPECIFICATION
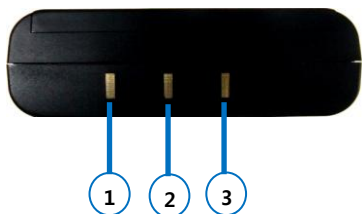
1. −
2. Temperature sensor
3. +

NOTE: Do not stand the Belt Pack direct on electric conductors such as bracelets, keys and etc. and do not short the metal contacts on the bottom of the Belt Pack with those electrically conducting material.

BASE STATION MENU

LAON1 HF00 PTT01
3 AUXin 1
HFon
LAON1 LAON1

LAON1 BS01 RBS00
3 AUXin 1
HFon
LAON1 LAON1

<NORMAL Menu>

VOLUME MONITOR
UNLATCH RBS
BELTPACK BS
QUIT

<MAIN Menu>

SPEAKER 7 MIC 5
SIDETONE1 AUXin0
AUXout 0
QUIT

<VOLUME Menu>

UNLATCHall QUIT
TALKER LAON1

<UNLATCH Menu>

BPK# 003
LABEL/GROUP/Pair
RESETmenu
QUIT

<BELTPACK Menu>

BPK#:003 QUIT
LAON1 123 (()
LAON2 123
CJH03 123

<LABEL/GROUP/PAIR Menu>

BPK#:003 QUIT
RESETLABEL
GROUP PAIR

<RESET MENU>

LAON1 BS G0Q
LAON2 BS G2U
CJH03 BS G0I
BP004 BS G0T

<MONITOR Menu>

QUIT
RBS 1
PAIR
LINK X

<RBS Menu>

QUIT
TALK GROUP 123
AUX GROUP 123

<GROUP SET menu>

V0122 F05/11QUIT
GROUP SET
SIDETONE LEVEL

<BS Menu>

QUIT
TALK ON LEVEL 2
AUX ON LEVEL 1

<SIDETONE LEVEL menu >

NOTE: Menu displays will be in sleep mode if no touch is made for approximately 30 minutes. Touching any button on the front panel of the Base Station will have the screen waken up.

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BELT PACK MENU

Display	Description
Ξ BS 1 ▭ HF On BP2	\<NORMAL Menu\>
LAON1 QUIT BP250 V013 ID001	\<MAIN Menu\>
Hands Free On Off	\<Hands free on/off\>
Speaker Volume 09	\<Speaker volume\>
Microphone Gain 02	\<Microphone gain\>
Side tone 05	\<Side tone volume\>
Two Groups 1 2 3 QUIT	\<Two Groups\>
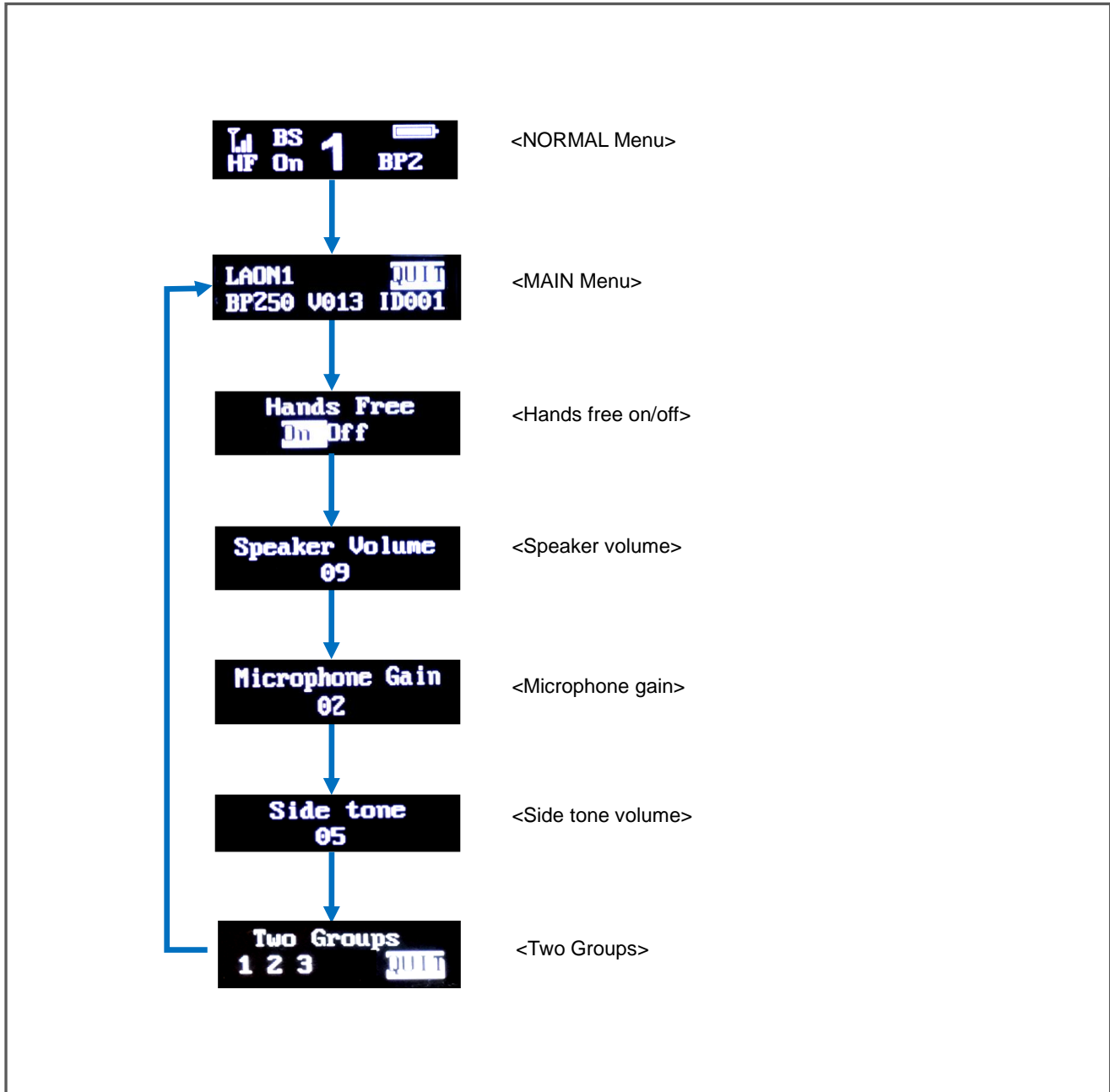
SECTION 3: SYSTEM SETUP AND CONNECTIONS

BATCHG125 BATTERY CHARGER SETUP

The BATCHG125 is a seven-bay charger for charging the Belt packs, BAT50 and BAT150 Rechargeable Battery Pack. It is able to charge up to five Belt Packs and two BAT50 Rechargeable Battery Packs either separately or together in about 4.5 - 5 hours. Using the Belt Pack/BAT150 bay, up to two BAT150 Rechargeable Battery Packs can be charged instead of the Belt Pack. LEDs show charging status at all times.

See the "**BATCHG125 Operating Instructions**" for details.

BS250 BASE STATION SETUP

Following descriptions are stand-alone LT250 system configuration. Using additional devices such as Remote Base Station, auxiliary input/outputs and 8ohm speaker will be explained later.
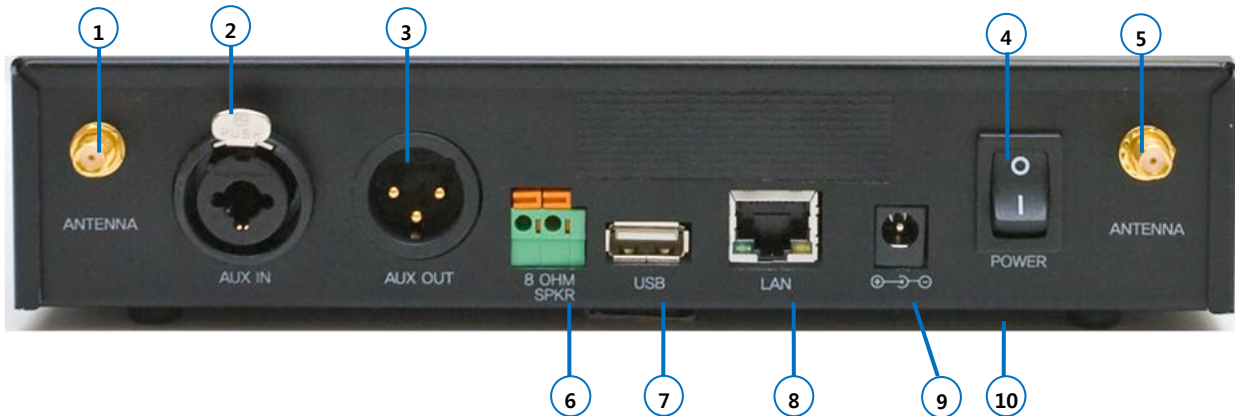

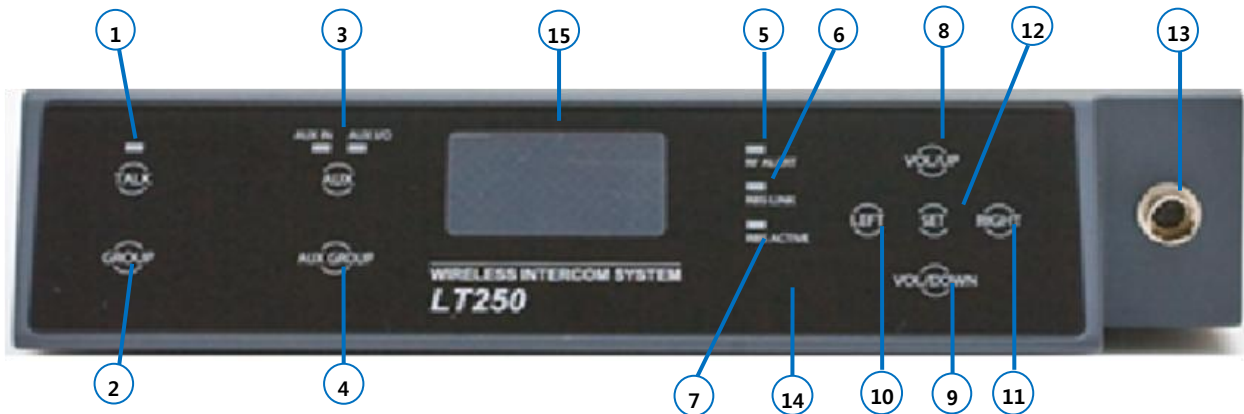Figure 3-1. Rear Panel of the Base Station

Figure 3-2. Front Panel of the Base Station

Step 1: Put two enclosed antennas to the antenna connectors (#1 and #5) on the rear panel of the Base Station. Turn the sleeve on each of the antenna connectors clockwise to tighten them, and ensure that the antennas are connected firmly.

 NOTE 1: These two antennas must be positioned vertically and be folded completely as 90 degree. Otherwise, it will be caused to weaken the signal.

 NOTE 2: While attaching the antennas directly to the rear panel of the Base Station, the Base Station should be away from any metal obstructions, walls, and electronic equipments that can create radio interference. It is highly recommended to place the antenna as high as possible in the center of the coverage and away from obstructions. The antenna extension cable enables an antenna to be mounted away from the Base Station to extend coverage.

Step 2: Plug the DC cable from the enclosed wall-adapter power supply into the 12VDC POWER connector (#9) on the rear of the Base Station. Plug the large female connector at the end of the AC power cord into the power supply. Plug the other end of the AC power cord into a standard wall outlet.

Step 3: The headset is with 'Push-Pull Lock' type connector. Put a headset into the HEADSET connector (#13) on the front panel of the Base Station. To disconnect the headset, hold the plug on the headset connector and pull out.

Step 4: Press the POWER switch (#4) on the rear panel of the Base Station to turn on the Base Station. 'DFS detecting' will be indicated on the Base Station's front panel display and once the detecting is completed, NORMAL menu will pop up as shown in Figure 3-3: The green light on top of the TALK button (#1) should be flashing slowly indicating the readiness of Base Station to start operations.

Figure 3-3. NORMAL menu

See the "**BS250 BASE STATION OPERATION"** in SECTION 4 for details about the NORMAL menu.

BP250 BELT PACK SETUP AND PAIRING UP

When you operate each Belt Pack for the first time with the Base Station, you must pair up the Belt Pack with a Base Station. This pairing process allows a Base Station and a Belt Pack to recognize each other. The Base Station will identify all Belt Packs that paired up before and will recognize the difference between the Belt Packs. If a Belt Pack is added or replaced later, the new one is necessarily to be paired up with the Base Station. If the previous Belt Pack will not be in use, turn off the Belt Pack or do the paring process again with a different label.

A maximum of 32 Belt Packs can be paired up with each Base Station in the normal mode. If you need to pair up more than 32 Belt Packs with the Base Station, additional 96 Belt Packs can be paired and those additional Belt Packs can be used in shared mode. Belt Packs with which have been paired up in the shared mode operate in the 'Push-to-Talk' mode and are allocated to Communication Group "3" automatically. Base Station monitors the status for 32 Belt Packs in the normal mode and does not monitor for additional 96 Belt Packs in shared mode.

NOTE: BP250 can also be paired up with the Base Station, MS150 and can connect with either Base Station that is lastly paired up.

BELT PACK SETUP
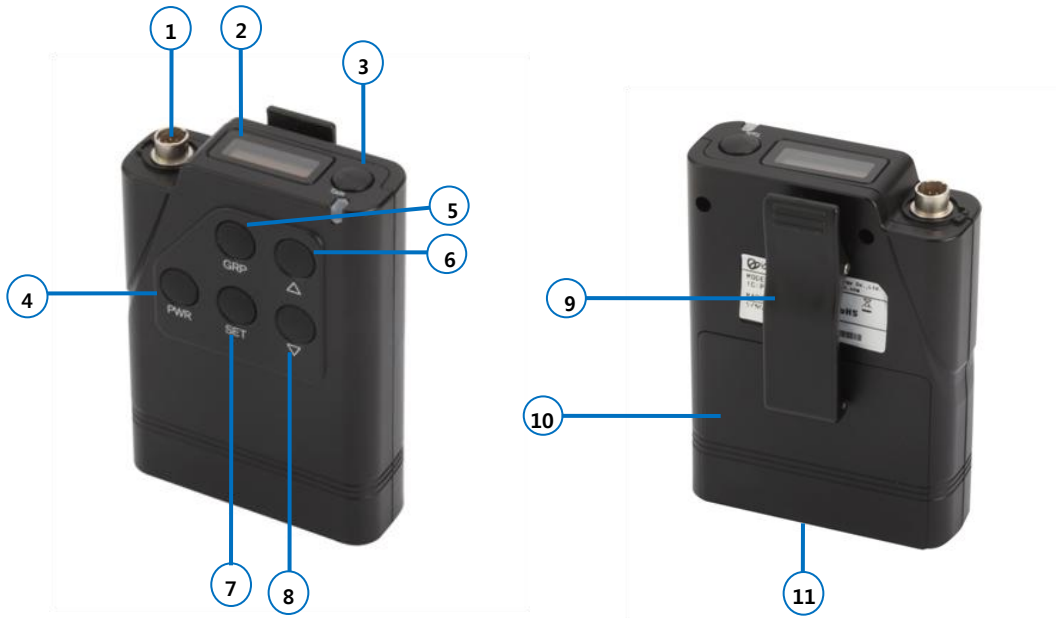
Before pairing up the Belt Pack with the Base Station, set up all Belt Packs as following steps:

Slide the cover down to open the battery cover (#10), and put a fully charged rechargeable battery pack (BAT50) or battery sled with two fresh AA 1.5V alkaline batteries. Make sure the position of polarity (+, -) is correct. Close the battery cover.

PAIRING UP BELT PACKS

Check out the power status of the Base Station and each Belt Pack's, which will be paired up with. To execute a paring process, the Base Station and Belt Packs should be on. Belt Packs should not go further than 3 feet (1 meters) of the Base Station while they are being paired.

NOTE: Once paring is completed, the Base Station and each Belt Pack should go further than 6.5 feet (2 meters) to operate otherwise, there could be audio breakups.
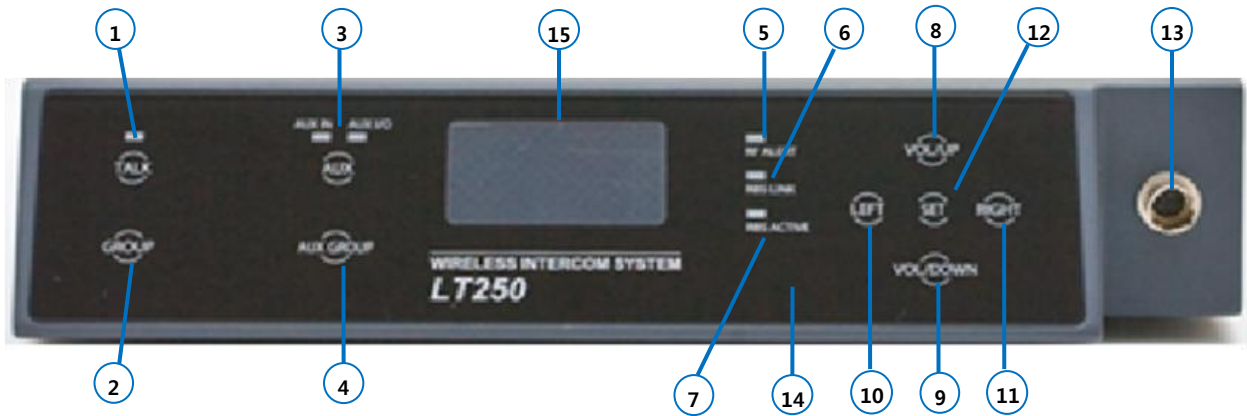

Figure 3-4. Front Panel of the Base Station

In NORMAL menu(#15) on the Base Station's front panel display, press SET(#12), then the MAIN menu appears, as shown in Figure 3-5. Under MAIN menu, scroll(#8, #9, #10, #11) to and select 'BELTPACK' and press SET(#12) then the BELTPACK menu appears, as shown in Figure 3-6.
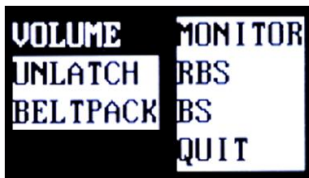
Figure 3-5. MAIN menu

Figure 3-6. BELTPACK menu

### SETTING THE MAXIMUM NUMBER OF BELT PACKS (BPK#)

Enter the maximum number of Belt Packs that you want to pair up with the Base Station. Under the BELTPACK menu, press SET(#12) on "BPK#" then input the maximum number by pressing UP, DOWN (#8, #9) buttons and press SET(#12) to save. If the number of BPK# is exceeded 32, the message "Shared" appears. Move to next item 'LABEL/GROUP/PAIR' and press SET(#12).

CREATING BELT PACK LABELS, COMMUNICATION GROUPS AND PAIRING
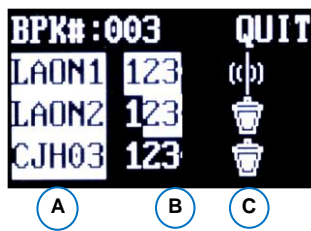
A. BELT PACK LABEL

B. COMMUNICATION GROUPS

C. PAIRING ICON

Figure 3-7. LABEL/GROUP/PAIR menu

To set up the Labels and Communication Groups of Belt Packs, under the BELTPACK menu, move to and select 'LABEL/GROUP/PAIR'. The LABEL/GROUP/PAIR menu appears, as shown in Figure 3-7. The maximum number of Belt Packs set in BELTPACK menu will be displayed on the first row followed by BPK#. Belt Pack Labels will be shown as '_P001' through '_P032' sequentially depending on the maximum number of Belt Packs set and you can customize the Belt Pack Labels. If the maximum number of Belt Packs is more than 32, Belt Pack Labels under the shared mode will be shown as "_P033" through "_P128" sequentially, depending on the maximum number of Belt Packs set.

NOTE: Up to 32 Belt Packs can be paired up with each Base Station in the normal mode. And, up to 32 Belt Pack Labels and Communication Groups can be customized under the LABEL/GROUP/PAIR menu. Additional 96 Belt Packs under the shared mode are allocated to generic labels "BP033" through "BP128" and to Communication Group "3" automatically.

PARING ICONS

(🗑) : Factory default status with no input of paring data
(🗑) : Data edited and being ready to execute paring
(⊠) : Paring processing
(🕷) : Paring failed
(🔊) : Paring completed - Base station can communicate with Belt pack from this stage.

CREATING OR CHANGING BELT PACK LABELS

To set Belt Pack Label, under the LABEL/GROUP/PAIR menu, move to Belt Pack Label section ('**A**') by pressing LEFT or RIGHT (#10, #11) and press SET on it to enter into the edit mode. Input the Label by pressing UP or DOWN (#8, #9). The display shows alphabets and numbers sequentially. After setting of the Belt Pack Labels, press SET to save and move to Communication Group section ('**B**'). Then the icon (🗑) will be changed to (🗑).

When changing a Belt Pack Label for a Belt Pack which is already in paired mode, follow the same process. In this case, the icon (🔊) will be changed to (🗑) once you enter into the edit mode.

ALLOCATING COMMUNICATION GROUPS TO BELT PACK

Move to a Communication Group number which you want to select by pressing LEFT or RIGHT (#10, #11). Single or multiple groups within the three (3) groups, '1 2 3' can be set for each Belt Pack by selecting the Communication Group number and press SET(#12) on it to save one by one. To reverse the saved groups, press SET(#12) on the group number to be reversed.

In order to change the Communication Group for a Belt Pack which is already in paired mode, follow the same process. In this case, the icon (🔊) will be changed to (🗑) once you enter into the edit mode.

NOTE 1: Communication Group setting should be done correctly. Otherwise, it is not able to move out to the next process.

NOTE 2: Any Changes in LABEL/GROUP/PAIR menu require paring process for the applicable Belt Packs to be effective. After modifying the Belt Pack Label and or Communication Group, implement the pairing processing again.

READY FOR PAIRING PROCESSING WITH BASE STATION

Once the Belt Pack Label and Communication Group set is done in the LABEL/GROUP/PAIR menu of the Base Station and the applicable Belt Pack is ready, move on to the paring icon ( ) by pressing LEFT or RIGHT (#10, #11) under the LABEL/GROUP/PAIR menu of the Base Station.

READY FOR PAIRING PROCESSING WITH BELT PACK

Turn on the Belt Pack by pressing PWR button for 2 seconds and confirm the NORMAL menu is displayed. When a Belt Pack is not paired up yet, the LED adjacent to the TALK button will be blinking in red. If the Belt Pack for pairing is already turned on, turn the power off and on again.

EXECUTING PARING PROCESSING WITH BASE STATION AND BELT PACK

Press SET on the paring icon ( ) in the menu display of the Base Station to execute paring processing. Then the Base Station is in 'paring processing mode' showing the icon ( ). At this time, for the Belt Pack, quickly press the SET button on the front panel just after pressing and holding the PWR button. By doing this, the Belt Pack will also be in 'pairing processing mode' and the message, "Pairing…" will shortly appears on the Belt Pack display.

If the paring is completed successfully, the paring icon, ( ) is shown in the Base Station display. And the Belt Pack display is shown as Figure 3-8 and shortly shows the NORMAL menu. If the paring is failed, the display is shown as Figure 3-9.

NOTE 1: When executing the paring processing with Belt Pack, after pressing and holding the PWR button, quickly press the SET button and release the two buttons otherwise, the Belt Pack power may be off.

NOTE 2: When you pair up each Belt Pack with the Base Station for the first time, each ID number of the Belt Pack is generated sequentially.

IF PAIRING COMPLETED PROPERLY:

The display of the Belt Pack shows Belt Pack Label with an ID number that is sequentially generated from "1" to "128". If the paring is completed successfully "Paring…" message will be changed to "Paring Completed" within 20 seconds as shown from Figure 3-8. And the LED adjacent to the TALK button of the Belt Pack is changed to green.
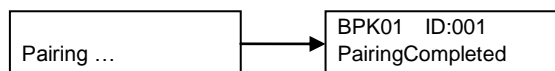
Figure 3-8: Pairing completed status

Move to QUIT and press SET button to back to BELTPACK menu.
Repeat the paring processing for each Belt Pack to be paired up.

IF PARING IS FAILED:

After the message "Pairing..." appears on the Belt Pack display, there may be a delay up to 20 seconds until "Pairing Failed" appears on the Belt Pack display. Try to process the paring again. If the paring is still failed, try again after rebooting of the Belt Pack. If these processes do not work, please contact your dealer or manufacturer for further supports.
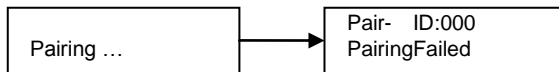
Figure 3-9 : Pairing failed status

PARING FOR REPLACEMENT

When you pair up a new Belt Pack ('BP002') to replace one ('BP001') that is already in paired mode, turn off the 'BP001' and execute the paring processing with 'BP002". The 'BP001' can be in use with another Belt Pack Label and ID after executing the paring up processing again.

NOTE: If a Belt Pack Label (ID) is duplicated, communication error may occur.

RESET BELT PACK LABELS, COMMUNICATION GROUP, PAIRING

Figure 3-10. RESET menu

In RESET menu under the BELTPACK menu, you can reset all the present pairing data of Belt Pack Labels and or Communication Groups to the factory defaults. While processing resets on the Base Station and until the paring processing is completed again, the applicable Belt Pack is not able to communicate.

RESET BELT PACK LABELS AND COMMUNICATION GROUP

Move to 'LABEL' or 'GROUP' and press SET button. The display shows "Yes No", then move to "Yes" or "No" with RIGHT or LEFT button and select. If you go to QUIT and press SET button, you can go back to BELTPACK menu. Move to 'LABEL' and select "Yes" then, all existing Belt Pack Labels will be set back to the factory defaults to '_P001' through '_P032'. When you select 'GROUP' and "Yes", all the existing setups for Communication Groups will be reset to the factory default and all the paring icons are changed to ( ).

NOTE: Pairing process should be applied after reset to communicate with the Belt Packs.

RESET PARING

If you select "PAIR" in the RESET menu and "Yes", existing Belt Packs' pairings with the Base Station will be lost. Under the BELTPACK menu, the maximum number of Belt Packs (BPK#), Belt Pack Labels and Communication Groups are also changed to factory default. And AES code of the Base Station should be changed to another next one within the three AES codes.

NOTE: While reset pairing, all connections to Belt Packs will be off. After reset pairing, pairing processing should be applied to all Belt Packs again.

ADDITIONAL DEVICES SETUP

The following instructions are about connecting and setting up additional devices, such as auxiliary audio devices, external 8 ohm speakers and a Remote Base Station.
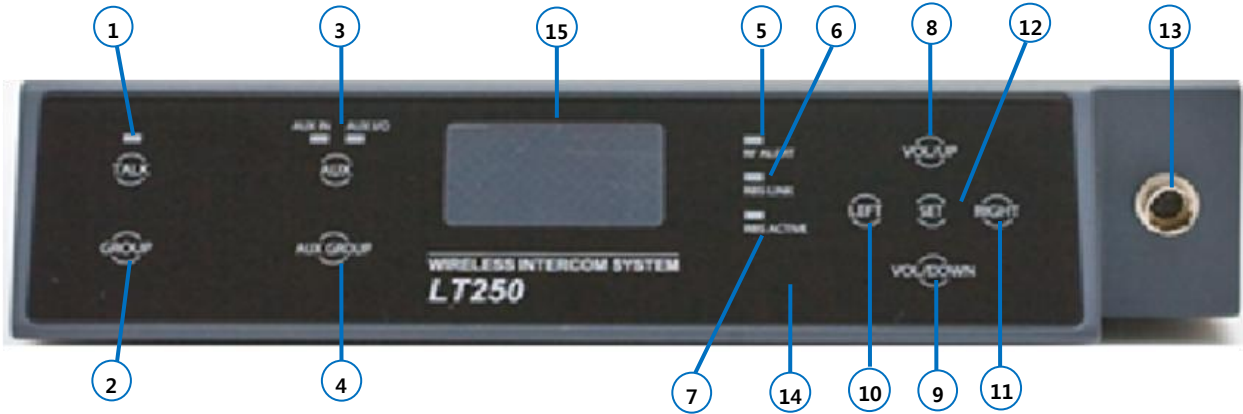
Figure 3-11. Front Panel of the Base Station
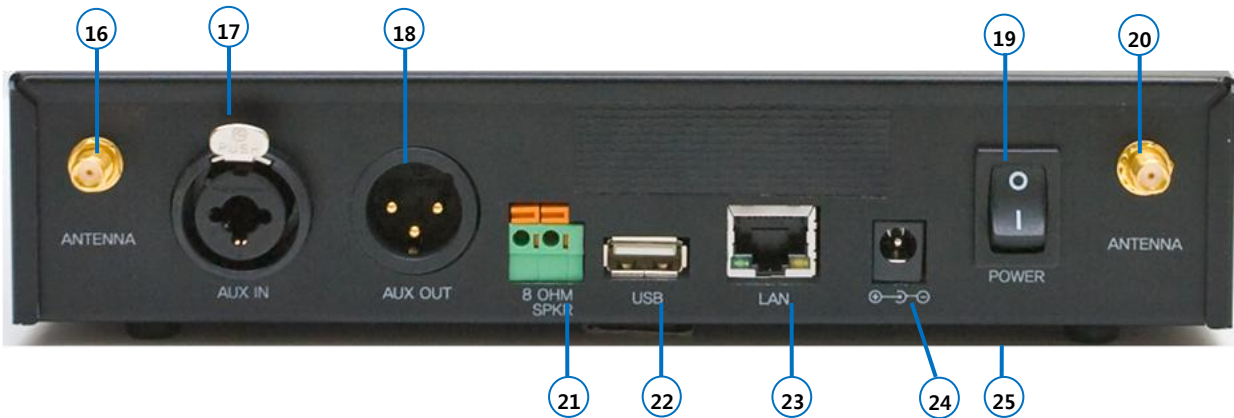
Figure 3-12. Rear Panel of the Base Station

Additional Devices and Base Station's Headset Set Up

On the Main Menu, move to and select BS menu for group settings and sidetone level adjustment. The display shows the Software version information of the Base Station and the ID of frequency bands currently being used at the Base Station will be shown on the first row as shown from Figure 3-13. Use Left/Right/Up/Down button to move and press SET to select a menu for set up.
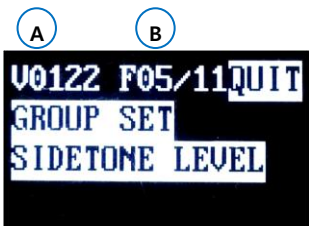
Figure 3-13. BS Menu

A. Software version of the Base Station
B. ID of frequency bands currently being used

Select GROUP SET menu as shown from the Figure 3-14 and press SET. Allocate Communication Groups for Headset of Base Station and additional device as required.

Figure 3-14. GROUP SET menu

For Headset of Base Station, select "TALK GROUP" and for Auxiliary device, select "AUX GROUP". On the selected device, use LEFT or RIGHT to move to desired Communication Group number from '1' to '3. Single or multiple groups within the three groups, '1 2 3' can be set for each device by selecting the Communication Group numbers and press SET to save one by one. Once the desired Communication Group is set, the set Communication Group number on the menu display will be reversed in white block. Move to and select QUIT to return to BS Menu.

Select SIDETONE LEVEL menu as shown from the Figure 3-15 and press SET to adjust sidetone levels.

Figure 3-15. SIDETONE LEVEL menu

The sidetone on Belt Pack is 'Returned Voice' from the Base Station. While any of others are talking, the speaker volume level set for the Belt Pack is applied to hear your own voice and when no others are talking, the sidetone volume level set for the Belt Pack is applied. However, ambient noises are often mis-detected as 'talking voice' depending on the environment and your own voice will be heard according to the speaker volume level in this case although there are no talking voices from other users. Given this and in consideration of the various site environments, SIDETONE LEVEL menu provides '0' to '6' different detection level options by the injected sound levels into the headset so that the users can decide the detection level to switch by themselves and adjust as they want.

For the communication between the Base Station and Belt Packs or among Belt Packs, select 'TALK ON LEVEL' for the sidetone level adjustment. When there is an Auxiliary device connected, select and adjust with 'AUX ON LEVEL'. When you connect an Auxiliary device, go to the 'AUXILIARY DEVICE SETUP' section below and complete the connection set up first. And then adjust the sidetone level in the SIDETONE LEVEL menu under BS menu with the following guideline. Move to QUIT and press SET to return to BS menu.

TALK ON LEVEL adjustment
Recommended level option is '2' for the communications between the Base Station and Belt Packs or among Belt Packs while not connecting external devices. The level '0' may detect extra low level of sound and consequently, the speaker volume level set for the Belt Pack will be applied to hear your own voice and the sidetone volume level adjustment from the Belt Pack will not be active. If you set the level as '3', the sidetone volume level set for the Belt Pack will be applied even though there is a 'talking voice' by other users and the speaker volume level adjustment from the Belt Pack will not be active. Indeed, there could possibly be worse audio performance when the sidetone and speaker volume levels are not on the same level.
When there is a big gap between the sidetone and speaker volume level set for the Belt Pack, users could possibly feel uncomfortable with the audio performance due to the noise level differences from between the sidetone level and speaker volume level. In this case, set the TALK ON LEVEL to '0' from the SIDETONE LEVEL menu under BS menu then the noise level difference

will not be heard. The sidetone volume level adjustment from the Belt Pack will not be active in this case.

AUX ON LEVEL adjustment

In case of connecting an Auxiliary device, the noise level could be very high due to the connection between different devices. Adjust and find out the most comfortable sidetone detection level by selecting and confirming the audio performance by each level from '1' to '6'. High fluctuation of the sound level is expected due to noises by the wired connection thus, basically level '0' is most recommended. While setting the level to '0' in the SIDETONE LEVEL menu, the sidetone volume level adjustment from the Belt Pack will not be active.

AUXILIARY DEVICE SETUP

Step 1: When you use auxiliary device, such as another intercom or other audio sources, put its output cable connector into the AUX IN connector (#17) and its input cable connector into the AUX OUT connector (#18), as the following pin connections. The AUX OUT and AUX IN connectors are 3-pin XLR type for balanced +20dBV (10V) maximum level.
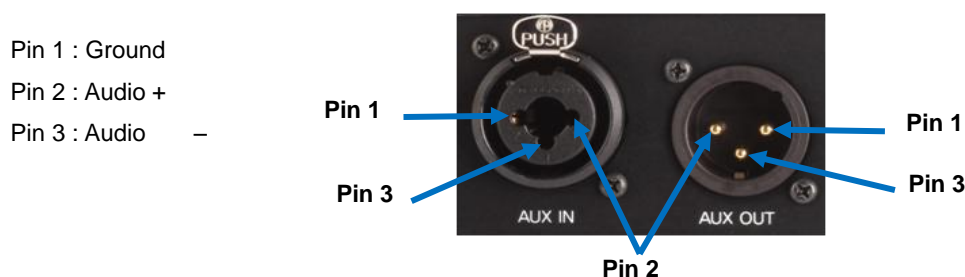
Pin 1 : Ground
Pin 2 : Audio +
Pin 3 : Audio   –

Figure 3-16. AUX IN and AUX OUT Connectors

Step 2: Selecting auxiliary input or auxiliary Input /Output and Communication Group

AUX BUTTON

There are two lights on top of the AUX button (#3). By pressing the AUX button sequentially, you can choose only auxiliary input (AUX IN) or Auxiliary input and output (AUX I/O) at the same time or neither of them. Both lights should go off when you select not using the auxiliary device.

AUX COMMUNICATION GROUP BUTTON

Communication Groups in the Base Station are set to use "1" (Group 1) by default. Press auxiliary Communication Group button (#4) and select Communication Groups (1, 2, 3 or A) for auxiliary device by pressing SET on each Communication Group number. The Communication Group will change from "1" to "3", and to "A"(All) by each pressing. The Communication Group "1" will come again after "A"(All). Selected Auxiliary Communication Group will be on NORMAL Menu, as shown in Figure 3-3: When the Base Station or Belt Packs set a same Communication Group as that of the auxiliary device, they can communicate with the auxiliary device.

Step 3: To adjust the auxiliary input volume, under the MAIN menu of the Base Station's front panel display, move to and select VOLUME. Then the VOLUME menu appears.

Under the VOLUME menu, move to and select AUXin which will lead you to volume values. You can change values by UP or DOWN button. Listen to the audio input in your headset and adjust the auxiliary receiving level. After adjusting the level, press SET, Move to AUXout and press SET button which will lead you to volume values. You can adjust auxiliary sending level in the same way. While speaking into your headset microphone, adjust the auxiliary sending levels to the desired listening level. Pressing SET for 2 seconds will lead you to the Normal menu.

EXTERNAL SPEAKER SETUP

Step 1: When you use external 8 ohm speaker, connect its cable wire to the 8 OHM SPKR 2-pin Spring Clamp connector (#21), as the following pin connections. To plug a cable wire into the 2-pin spring clamp connector, push and hold an orange-colored wire-release latch on the top of the connector, then put a cable wire into its applicable pin and release a wire-release latch.

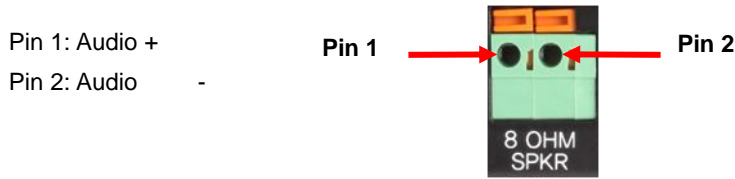Pin 1: Audio +
Pin 2: Audio   -

Figure 3-17. 8 OHM SPKR 2-pin Spring Clamp connector

Step 2: To adjust the speaker volume, under the MAIN menu of the Base Station's front panel display, move to and select VOLUME. Then the VOLUME menu appears.

Under the VOLUME menu, move to and select SPEAKER will lead you to volume values. You can change values by UP or DOWN button.

VOLUME UP ADJUSTMENT

Every time you press and release the volume up button, a beep will be heard from the external speaker as increased volume. If you press and hold the volume up button, repeating beeps will be heard until the steps up to maximum. When maximum volume is reached, "maximum" will be heard from the external speaker until you release the volume up button.

VOLUME DOWN ADJUSTMENT

Every time you press and release of the volume down button, a beep will be heard from the external speaker as decreased volume. If you press and hold the volume down button, repeating beeps will be heard until the steps down to minimum. When minimum volume is reached, "minimum" will be heard from the external speaker until you release the volume down button.

NOTE: Either a headset speaker or an external speaker can be used; The SPEAKER volume is for adjusting the volume of both a headset speaker and an external 8 ohm speaker.

RBS25 REMOTE BASE STATION SETUP

A Remote Base Station (RBS) can be connected to the Base Station through LAN, composing customized and continuous coverage, and enabling automatic roaming between coverage zones. The Remote Base Station supports the communication with Belt Packs in remote area from the Base Station. Standard CAT-5 cable is used to connect the Remote Base Station either directly to the LAN port on the rear panel of the Base Station or via the Network Switch. Remote Base Station can be powered by a local electricity or network switching device which has the Power-over-Ethernet (POE) function. Remote Base Station shares up to nine (9) full duplex audio paths with the Base Station within the coverage area. Due to network traffic delay, audio breakups might occur in communications between Belt Packs in the Remote Base Station, or in communications with Belt Packs which are paired up with the Base Station. In that case, it is recommended to compose the network exclusively.

Figure 3-18. Panels of the Remote Base Station

1. ANTENNA connector
2. ANTENNA connector
3. Power button
4. Status lights
5. 12VDC POWER connector
6. USB connector

7. LAN RJ-45 connector with the POE function.
8. Battery Cover
9. Pouch for wall-mount
10. Battery sled
11. Rechargeable battery

Step 1: IP Network set up with a configuration tool program.

Download the LAON provided configuration tool program 'LXSetting.exe' on your PC and connect the PC with the Base Station through USB cable. Run the program on your PC and set up IP Network information required as following instructions.

CONFIGURATION PROGRAM MAIN DISPLAY
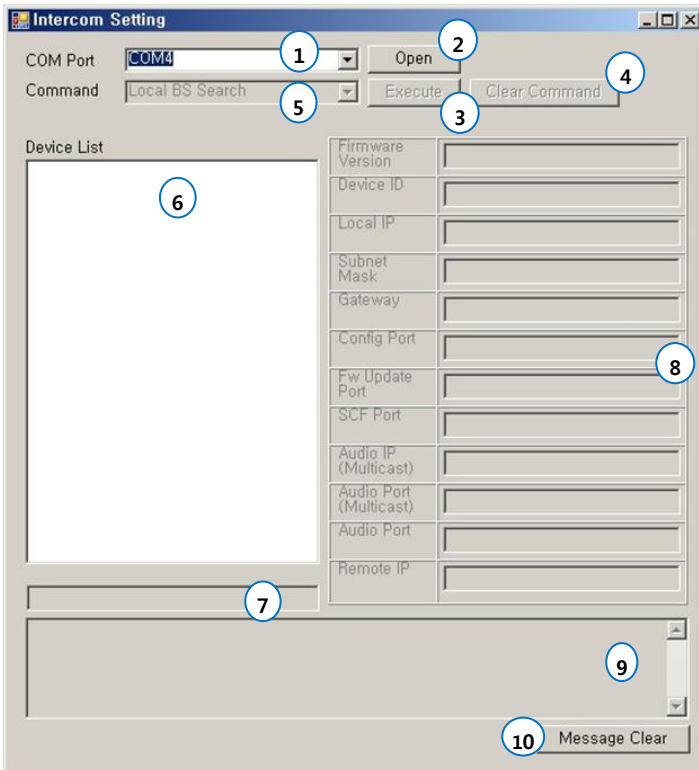
Figure 3-19. Main display of the configuration tool program

1. Serial port selection window
2. Serial port Open/Close button
3. Command execution button
4. Clear button for the executed Command
5. Command selection drop down menu and display window
6. Devices display window - BS and RBS
7. Command execution result display window
8. Network information display window
9. Additional message display window
10. Additional message delete button

1) COM PORT OPEN

Select the COM port being used on the PC from the drop down menu. Click 'Open' then, the pop up message 'COM Port opened' will be displayed if the correct port is selected as shown in the Figure 3-20.
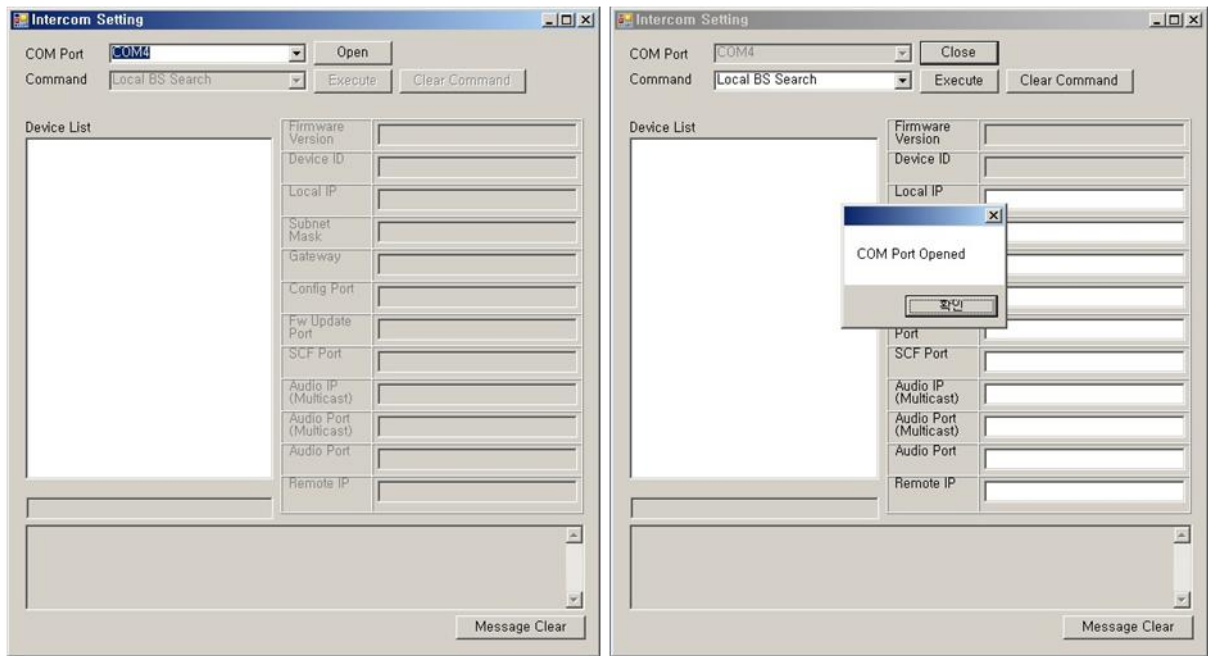
Figure 3-20. COM Port Open

2) DEVICE SEARCH

From the 'Command' selection drop down menu, click 'Local BS Search' and 'Execute' button. Then, the Base Station ('BS') being connected with the PC via USB cable will be detected in the 'Device List' window with Remote Base Station ('RBS') as shown from the Figure 3-21.
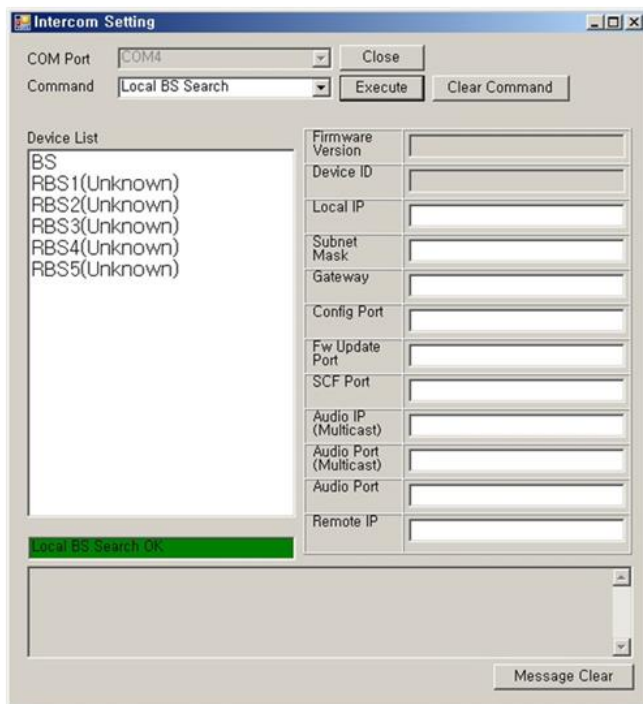
Figure 3-21. Device Search

REMOTE BASE STATION CONNECTION STATUS

To confirm the Remote Base Station's connection status, select RBS1 from the 'Device List' and select 'Remote RBS Search' from the 'Command' selection drop down menu and click 'Execute' button then, the network connection status will be displayed as 'Connected' or 'Disconnected' as shown from the Figure 3-22.
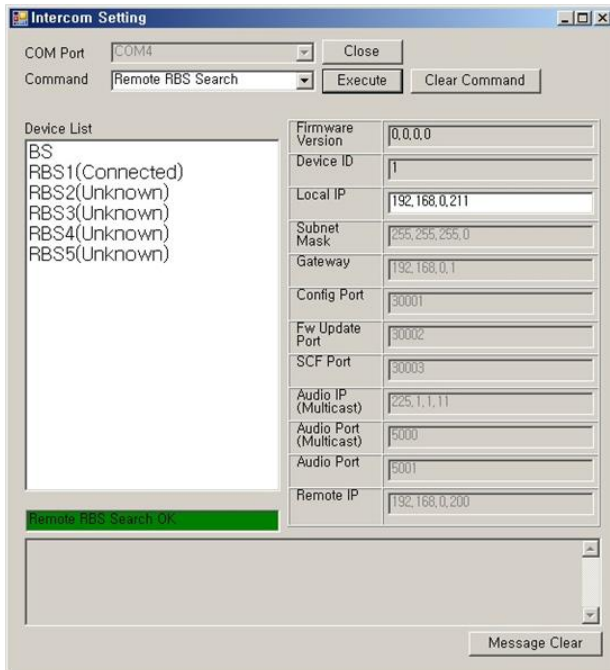
Figure 3-22. RBS connection status

3) **NETWORK INFORMATION DISPLAY**

Select a device, BS or a RBS to display the Network information details of the applicable device as shown from the Figure 3-23.
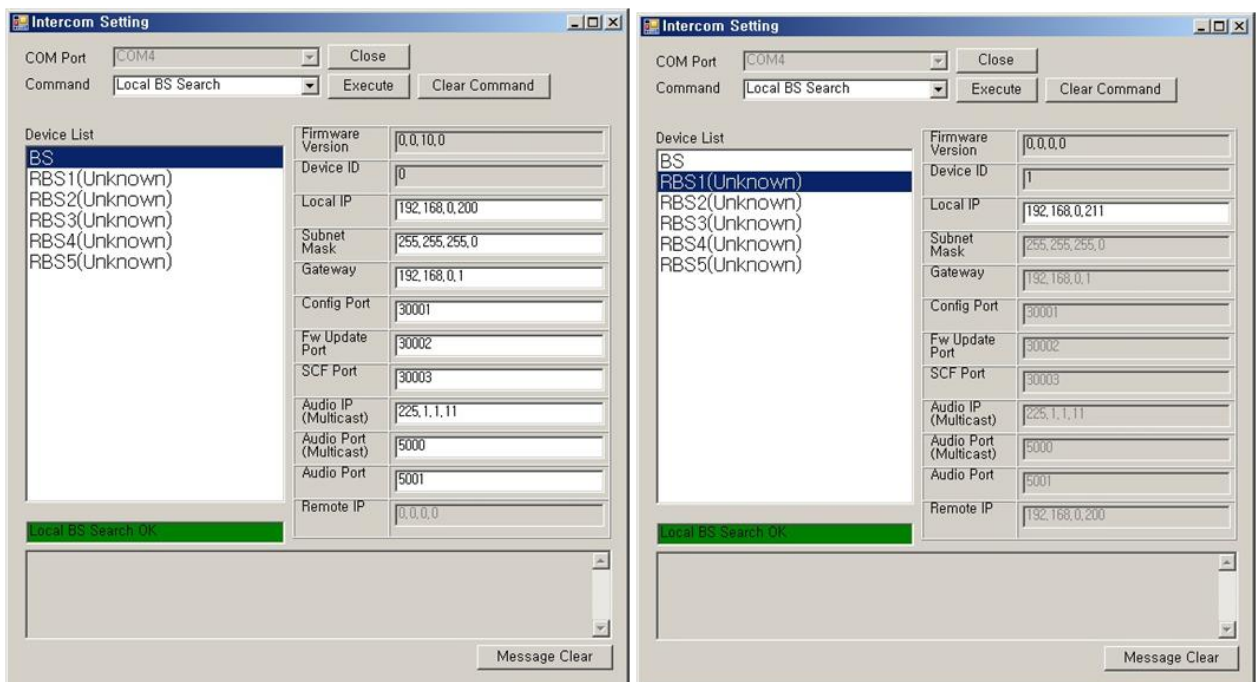
Figure 3-23. Network information display

4) NETWORK INFORMATION SET UP OR UPDATE FOR BASE STATION

In order to update BS's network information, select 'BS' from the 'Device List' and edit the value as required. Select 'Local Update' from the 'Command' selection drop down menu and click 'Execute' button to complete the update. As updating the BS network information, back to back RBS network information will be updated accordingly.

In order to update RBS's network information being set up at the BS, select RBS1 from the 'Device List' and edit information. Then, select 'Local Update' from the 'Command' selection drop down menu and click 'Execute' button to save as shown from the Figure 3-24.
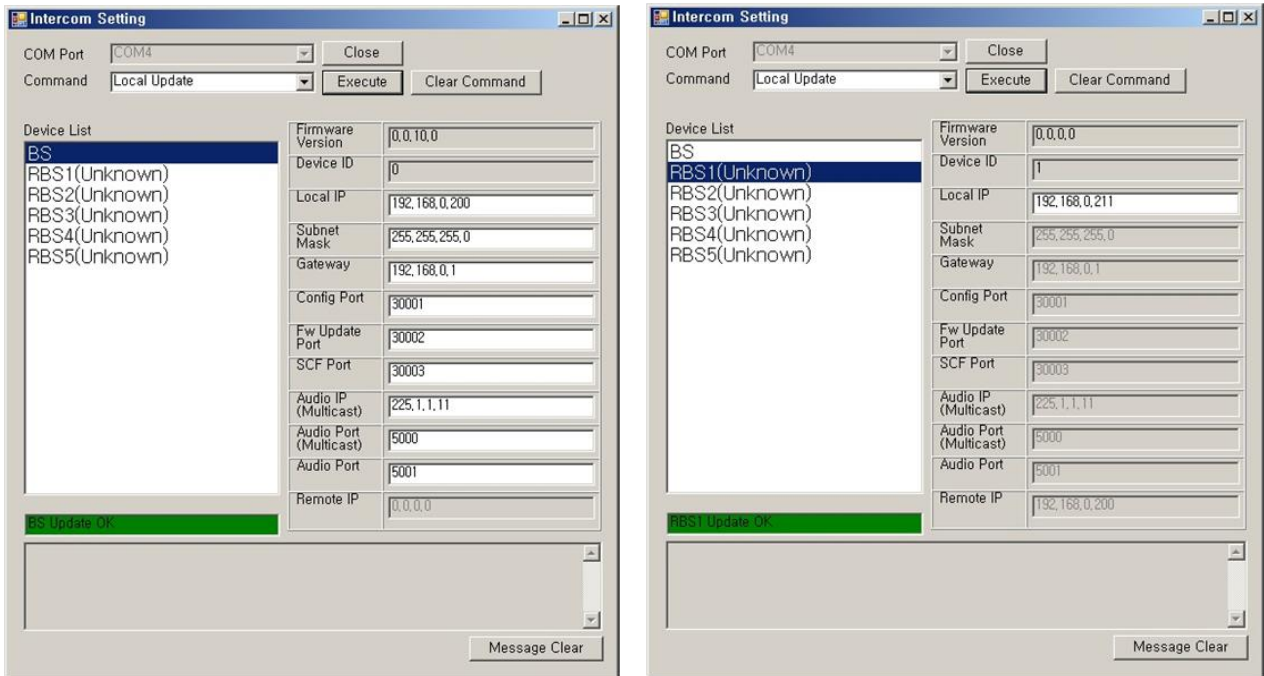
Figure 3-24. Local network information update for BS

In order to update the network information for RBS end, you may implement RBS pairing up process following the **Step 2** below.

All the log data of updated information will be saved in the same directory of 'LXsetting.exe' as 'LXsetting.txt', if the updates are done properly. Click 'Close' button to close the 'COM Port' and configuration tool program.

NOTE: In order to update the network information for RBS which is already in paired mode, you may implement either RBS pairing up process again or process it in this program with 'Remote RBS Update' command as following instruction.

All the devices including RBS should be connected to perform this process.

NETWORK INFORMATION UPDATE FOR REMOTE BASE STATION WHICH IS IN PAIRED MODE

Select RBS1 from the 'Device List' and select 'Remote RBS Update' from the 'Command' selection drop down menu. Edit the network information and click 'Execute' button to save the update as shown from the Figure 3-25. Reboot all devices after updates.
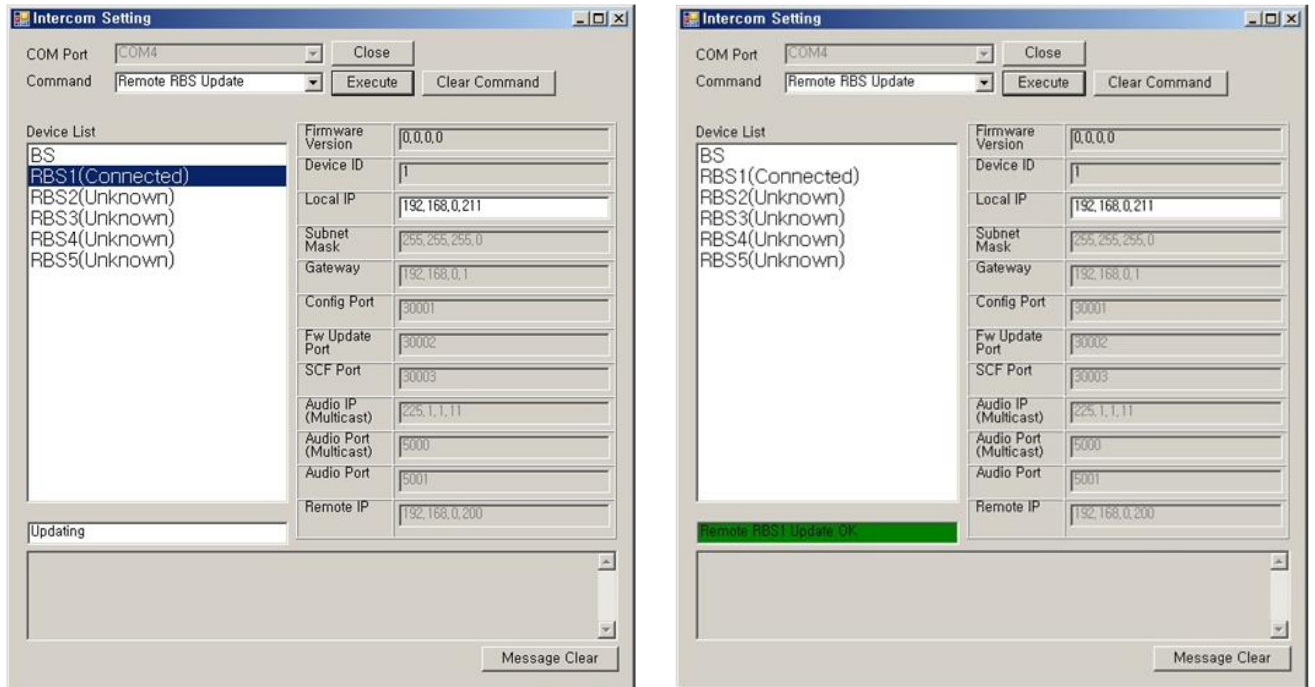
Figure 3-25. Network information update for RBS which is in paired mode

Step 2: Paring up the Remote Base Station with Base Station

Once the IP network information setting is completed, disconnect the PC from Base Station and reboot the Base Station. For pairing up process, the Remote Base Station should be connected direct to the Base Station through standard CAT-5 LAN cable.

1)   REMOTE BASE STATION SET UP

Put two enclosed antennas into the antenna connectors (#1 and #2) on the top panel of the Remote Base Station. Turn the sleeve on each of the antenna connectors clockwise to tighten them and ensure that the antennas are connected firmly.

NOTE: When attaching the antennas directly to the top panel of the Remote Base Station, the Remote Base Station should be away from any metal obstructions, walls and electronic equipments that can create radio interference. It is highly recommended to place the antenna as high as possible in the center of the coverage and away from obstructions. The antenna extension cable allows an antenna to be mounted away from the Remote Base Station for improved antenna coverage.

Supply power to the Remote Base Station
When you use the wall-adapter power supply:
   Plug the DC cable from the enclosed wall-adapter power supply into the 12VDC POWER connector (#5) on the bottom of the Remote Base Station. Plug the large female connector at the end of the AC power cord into the power supply and plug the other end of the AC power cord into a standard wall outlet.
When you use the battery:
   Pull the cover up to open the battery cover (#8) and put a fully charged rechargeable battery pack (BAT150) or battery sled with six fresh AA 1.5v alkaline batteries. Make sure the position of polarity (+, -) is correct.
When you use the network switching device which has the POE function:
   Connect CAT-5 cable to LAN Connector (#7) of Remote Base Station and connect the other side to network switching device which has the POE function.

2) WIRE REMOTE BASE STATION WITH BASE STATION

Put the CAT-5 cable into the Base station's LAN RJ-45 Connector (#23) as shown in Figure 3-12, and the other side into the Remote Base Station's LAN RJ-45 Connector (#7) as shown in Figure 3-18. Turn on the Remote Base Station by pressing the POWER button (#3) then the green light should go on.

In case of using battery, when the battery level is low, red light will go on.

3) IMPLEMENT THE PARING UP PROCESSING

On the MAIN menu of the Base Station, move to and select "RBS". The RBS menu appears as shown in Figure 3-26. Using LEFT or RIGHT button, move to the number, '1' next to 'RBS' on the RBS menu for paring up and press SET on it then, the corresponding pairing icon, ( ) in the next row is changed to ( ), indicating the paring is being processed. If paring processing is completed successfully, ( ) icon is displayed and if failed, ( ) is displayed in the RBS menu.

When the paring processing is completed between Base Station and Remote Base Station, the RBS LINK light on the front panel of the Base Station will go on and the RBS Active light will be blinking when there are data transmissions.

Once paring up process is completed, reboot both the Base Station and Remote Base Stations.

Figure 3-26. RBS menu

NOTE 1

The RBS LINK light on the Base Station will go on if there is a Remote Base Station linked in.

NOTE 2

The link status of the Remote Base Stations can be confirmed in the RBS menu as shown in the Figure 3-26. When the Remote Base Station is linked in, "O" is displayed and is not linked, "X" is displayed.

NOTE 3

During the pairing process, all the connections for communications are off.

Step 3: Wire the Base Station with the Remote Base Station for actual operation as shown from the Figure 3-27.
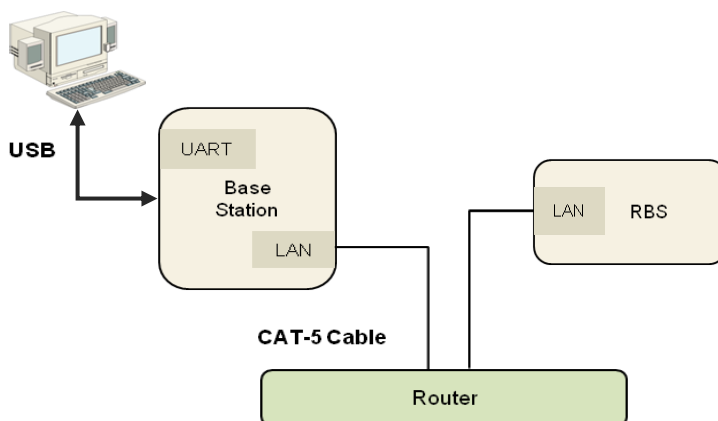
Figure 3-27. Connections example

NOTE: Not using dedicated network between the Base Station and the Remote Base Station, there would be delays due to network traffic. When there are audio breakups due to the delays, it is highly recommended to compose a dedicated network. 'Dedicated Network' means LAN is used only by the Base Station and Remote Base Station without any other devices connected.

STATUS LIGHTS ON THE FRONT PANEL OF THE REMOTE BASE STATION

RF ALERT light

When there are audio breakups seriously for each received frames, RF ALERT light will go on.

BS LINK light

When the Remote Base Station is connected to the Base Station, BS LINK light will go on.

BS ACTIVE light

When the Remote Base Station exchanges data with the Base Station, BS ACTIVE light will be flashing.

Step 4: Perform the coverage test

After installing the Remote Base Station initially, you can test the coverage areas to find optimal locations of the Remote Base Stations.

TESTING COVERAGE AREAS

Checking Received Signal Strength Indication Level

Once the Base Station and Remote Base Station are properly connected and the pairing is done, turn on the Belt Pack power and check the coverage area while walking around the Base Station or Remote Base Station. While talking and moving around, check audio breakups and Received Signal Strength Indication ('RSSI')('**A**') level on the Belt Pack's NORMAL menu, as shown in Figure 3-28:

A. RSSI level

B. Base Station or Remote Base Station that the Belt Pack is being connected
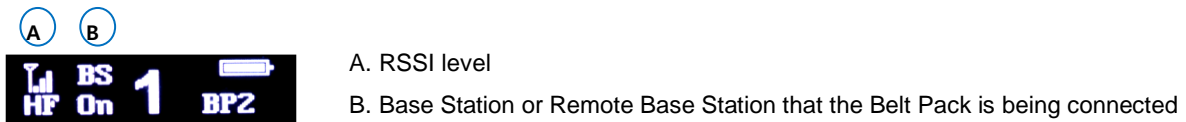
Figure 3-28. Belt Pack's NORMAL Menu

If RSSI Graphic bar is less than one and audio breakups start, that is the limit of coverage zone.

Mapping coverage zones

Draw a map of the coverage zone for the antenna of the Base Station and Remote Base Station as shown in Figure 3-29: While repeating this process, see if the Base Station and Remote Base Station cover the area enough.

Figure 3-29. Mapping coverage zone

Relocation of the Base Station and Remote Base Station

In a certain environment, audio breakups could occur even though high signal strength is observed.

There might be two reasons as followings:

- A Belt Pack is within 6.5 feet (2 meter) from the antenna that of the Base Station or the Remote Base Station.
- RF signals reflection could occur in an environment where there are a number of reflective surfaces, such as metal obstructions, walls or other large structures and electronic equipments that can create radio interference.

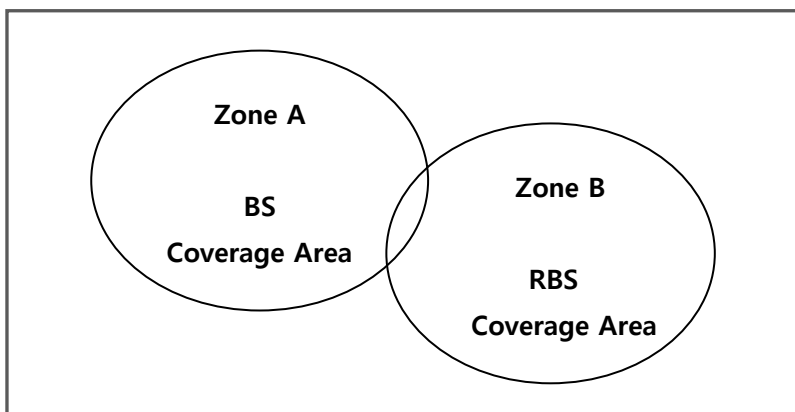You can relocate the Base Station or Remote Base Station antenna to avoid reflective surface. It is highly recommended to relocate the antenna as high as possible in the center of the coverage and away from obstructions. The antenna extension cable allows an antenna to be mounted away from the Remote Base Station for improved antenna coverage.

Testing antenna Handoff

After testing the coverage zones of the antennas that of the Base Station and Remote Base Station, you should continue to test handoff between the coverage zones. When your Belt Pack is out of coverage while walking through coverage zones, the Belt Pack searches to find another antenna of the Base Station or Remote Base Station and automatically roam to the antenna with the stronger signals. When the automatic roaming is performed smooth while walking through Zone A and Zone B, the distance between the antenna locations of the Base Station and Remote Base Station maybe ideal. In order to check the Belt Pack is connected to which of the Base Station or Remote Base Stations, look at Belt Pack's NORMAL menu, ('**B'**), as shown in Figure 3-28: If the Belt Pack is connected to the Base Station, "BS" will appear. If a Belt Pack is connected to the Remote Base Station, "R1" will appear. You can also check the status on the Base Station's MONITOR menu, as shown in Figure 3-30: The MONITOR menu shows each Belt Pack is connected to which of the Remote Base Station or the Base Stations.

Figure 3-30. MONITOR menu

When the overlapping area is wide between coverage zones or depending on the site environments, automatic roaming may not executed though the signal strength became weak and audio breakups occur. In that case, the Belt Pack needs to be totally out of coverage first for an automatic roaming. Otherwise, the user can manually roam to the other coverage zone by quickly pressing GRP button on the front panel of the Belt Pack while pressing and holding the PWR button and release both buttons.

NOTE: When manually roaming, do not press PWR button longer than 2 second otherwise, the Belt Pack will be turned off. In case of manual roaming, depending on the site environment and condition of installation, the Belt Pack could be out of coverage with a voice message from headset with the red LED blinking and then roamed to the other coverage zone with the green LED on.

See the " **BS550 BASE STATION OPERATION**" in SECTION 4 for details about the MONITOR menu.

SECTION 4: SYSTEM OPERATION

BS250 BASE STATION OPERATION

Base Station is designed with soft-touch buttons to select menus, hand-free on/off, auxiliary input/output, communication group, and so on. LEDs on the front panel indicate each selected modes and link status.
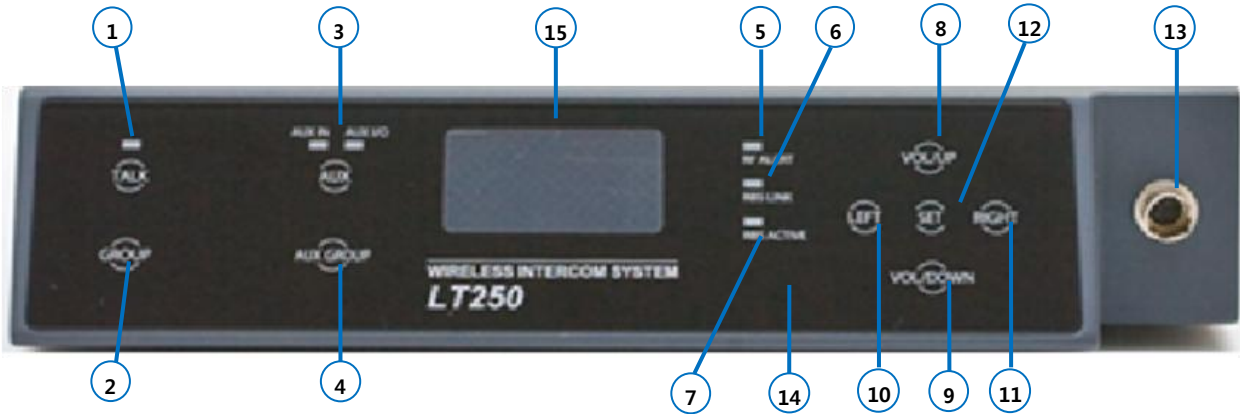
Figure 4-1. Front Panel of the Base Station
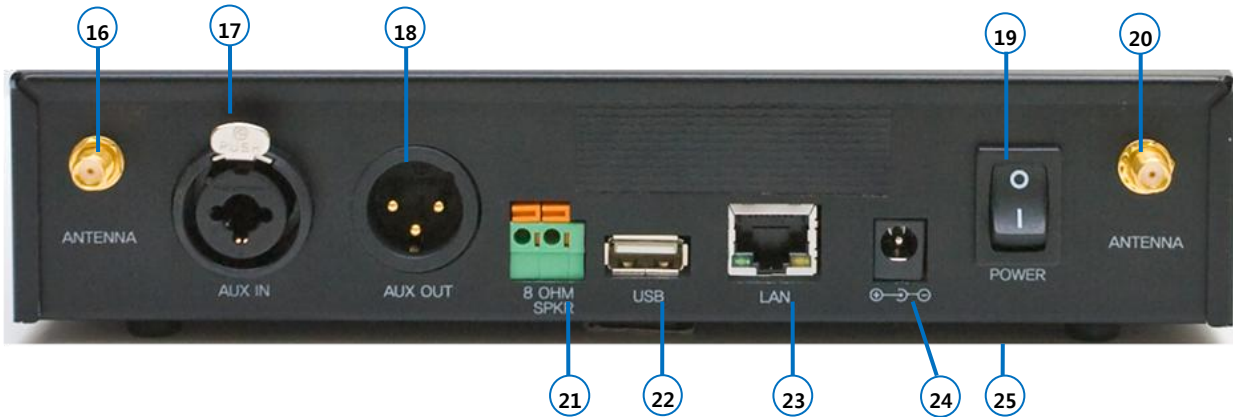
Figure 4-2. Rear Panel of the Base Station

POWER ON/OFF

Power On

Turn on the POWER switch (#19) on the rear panel of the Base Station. NORMAL menu will be displayed on the Base Station's front panel as shown from Figure 4-1 and 4-3: The green light on top of the TALK button (#1) should be flashing slowly indicating the readiness of the Base Station to be in use.

Power Off

Turn off the POWER switch on the rear panel of the Base Station.

NOTE: While the Base Station is transmitting, the green TALK light will be on steady. The green TALK light will be on slow blinking when the Base Station is ready while receiving the audio but not transmitting.

NORMAL MENU
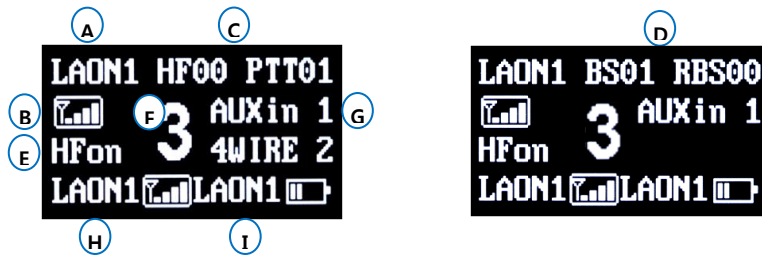
Figure 4-3: NORMAL Menu

NORMAL menu will pop up when the Base Station is working. When you want to move to the MAIN menu, press SET button. When you press UP or DOWN button under the NORMAL menu, the headset speaker volume can be adjusted directly. Followings are descriptions for NORMAL menu.

Item **A** indicates the Belt Pack Label that is most recently communicated within the selected group of the Base Station.

Item **B** indicates Received Signal Strength Indication (RSSI) of the Belt Pack that is most recently communicated with the Base Station. The RSSI level is presented graphically.

Item **C** indicates the numbers next to "HF", stand for the total number of Belt Packs that are transmitting the audio in Hands Free on mode and the numbers next to "PTT" stand for the total number of Belt Packs that are transmitting the audio in Push-to-Talk (Hands Free off) mode. The available number of Belt Packs that can transmit audio is up to eight (8).

Item **D** will appear on the position of the item **C** alternatively, such as "BS07 RBS05". The number next to "BS" stands for the number of Belt Packs that are connected to the Base Station. The number next to "RBS" stands for the number of Belt Packs that is connected to the Remote Base Station. When the number of Belt Packs is in excess of 99, 'FF' will be indicated to instead.

Item **E**, "HFon" appears on the display when the headset of the Base Station is in "Hands Free On" mode operation. Also, when the headset of the Base Station is in "Push-to-Talk" (Hands Free off) mode operation, "HFoff" appears on the display.

Item **F** indicates the Communication Group of the Base Station. The number "1" through "3" stands for the Communication Group that is selected by the Base Station operator. The character "A" stands for that the Communication Group is selected to "A"(All). The Base Station is able to do simultaneous communications with all the selected groups that are set from "TALK GROUP" menu.

Item **G** indicates the Communication Group of the auxiliary device. The display shows "AUXin" when AUX IN is enabled, and shows "AUXIO" when AUX IN and AUX OUT are enabled both. The number "1" through "3" next to "AUXin" or "AUXIO" stands for the Communication Group of the auxiliary device that is selected by the Base Station operator. The character "A" stands for that the Communication Group is selected to "A"(All). The Base Station is able to do simultaneous communications with all the selected groups that are set from "AUX GROUP" menu. The Communication Group will be on NORMAL menu as following examples.

AUXin 2: Auxiliary Input is enabled and the Communication Group of auxiliary device is set to "2".

AUXIO 1: Auxiliary Input and Auxiliary Output are enabled both and the Communication Group of auxiliary device is set to "1".

AUXIO A: Auxiliary Input and Auxiliary Output are enabled both and the Communication Group of auxiliary device is set to "A"(All).

AUX X: Auxiliary devices are not enabled.

Item **H** indicates the Belt Pack Label that is in the lowest Received Signal Strength Indication (RSSI) level. The RSSI level is presented graphically.

Item **I** indicates the Belt Pack Label that is in the lowest battery Level. The battery level is presented graphically.

NOTE: Initially, when there has been no Belt Pack paired up before, the Belt Pack Label indications of **A, H** and **I** in the NORMAL menu will be displayed as '_P000' and the corresponding graphic level indications will be empty.

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TALK AND COMMUNICATION GROUP BUTTONS

Communication Group Button (#2)

Communication Groups of the Base Station is set to use "1" (Group 1) by the factory default. Press the Base Station's Communication Group (#2) button on the front panel of the Base Station and select Communication Group. The Communication Group will change from "1" to "3", and to "A"(All) by each pressing. The Communication Group "1" will come again after "A"(All). Every time you press and release the Communication Group button, a voice message "Group one - three or all" will be heard from the headset. Selected Communication Group is displayed on the NORMAL menu of the Base Station, as following examples.

1:   Base Station's Communication Group is selected to "1":

A: Base Station's Communication Group is selected to "A"(All).

If you select the Communication Group of Base Station same as that of AUX IO, the headset of the Base Station should be able to hear audio from the AUX IO and the auxiliary device should be able to hear audio from the headset of the Base Station.

TALK Button (#1)

Push-To-Talk (hand-free off) Mode Setting

To set the Base Station for push-to-talk (PTT) communication, press HF/PTT button. PTT mode is on when "HF off" appears on the screen. A voice message "Hands free off" will be heard in the headset. Press TALK button while talking.

NOTE: After setting the PTT mode, hands-free on mode is disabled until it is changed to hands-free-on mode.

PTT Mode Operation

Press and hold the TALK button. In PTT operation, audio will be transmitted only while you are pressing the TALK button.

Hands-Free-On Mode Setting

To set the Base Station for hands-free-on (HFon) communication, press HF/PTT button. Hands-Free-On mode is on when "HF on" appears on the screen. A voice message "Hands free on" will be heard in the headset.   In hands-free-on mode, the Base Station's headset can be operated in either hands-free-on or PTT operation.

Hands-Free-On Mode Operation

Quickly press and release the TALK button to latch the transmission. After latch the transmission, talk and listen work as in normal telephone conversation. Quickly press and release the TALK button again to stop the transmission, and you can listen only.

TALK light

When the Base Station is transmitting, the light on top of the TALK button should be on steady. When the Base Station is ready but not transmitting, that is listen only status, the light on top of the TALK button should be blinking slowly.

AUX AND AUX COMMUNICATION GROUP BUTTONS

AUX Button (#3)

With AUX button you can select three options - only auxiliary Input (AUX IN) or auxiliary Input and Output (AUX I/O) or no use of auxiliary devices. Each mode is set by pressing AUX button sequentially. When auxiliary input is selected, AUX IN light on top of the AUX button will be on. When you use the auxiliary input and the auxiliary output devices at the same time, the AUX I/O can be selected. When AUX I/O is selected, AUX I/O light on top of the AUX button will be on. When no use of auxiliary devices is selected, AUX IN and AUX I/O lights on top of the AUX button will be off.

AUX Communication Group Button (#4)

Communication Groups of the auxiliary devices is set to use "1" (Group 1) by the factory default. Press AUX GROUP (#4) button on the front panel of the Base Station, and select Communication Group for the auxiliary device. The Communication Group will change from "1" to "3", and to "A"(All) by each pressing. The Communication Group "1" will come again after "A"(All). Selected AUX Communication Group is displayed on the NORMAL menu of the Base Station, as shown in Figure 4-3:

STAUS LIGHTS ON THE BASE STATION'S FRONT PANEL

RF ALERT light (#6)

When there are audio breakups seriously for each received frames, RF ALERT light will go on.

RBS LINK light (#6)

When the Remote Base Station is connected to the network switching device, RBS LINK light will go on.

RBS ACTIVE (#7)

When the Remote Base Station exchanges data with the Base Station, RBS ACTIVE light will be flashing.

MENU CONTROL

MAIN Menu

Press SET under the NORMAL menu, the MAIN menu appears, as shown in Figure 4-4: Move to and press SET to select on each menu, VOLUME, MONITOR, UNLATCH, BS, RBS, BELTPACK and MULTI-BS. Move to and press SET to select QUIT or press SET for 2 seconds on any item to return to the NORMAL menu.
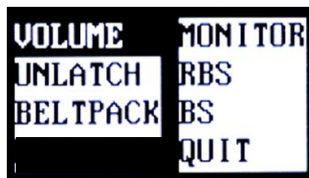
Figure 4-4. MAIN menu

VOLUME Menu

Move to and press SET on VOLUME, to get into the VOLUME menu as shown in Figure 4-5. You can adjust volumes of the Base Station's headset and external speaker by selecting SPEAKER. And you can adjust the microphone gain by selecting MIC, the side tone by selecting SIDETONE of the Base Station's headset, auxiliary Input and output level by selecting AUXin and AUXout. Move to and select QUIT or press SET for 2 seconds on any item to return to the MAIN menu.

Figure 4-5. VOLUME menu

Headset Volume Up and Down

Move to SPEAKER, press SET to select and adjust headset speaker volume with UP or DOWN. And also pressing UP or DOWN button under the NORMAL menu, enables you to adjust the volume directly.

Volume Up Adjustment: Every time you press and release the volume up button, a beep will be heard from the headset as increased volume. When maximum volume is reached, "maximum" will be heard from the headset until you release the volume up button.

Volume Down Adjustment: Every time you press and release of the volume down button, a beep will be heard from the headset as decreased volume. When minimum volume is reached, "minimum" will be heard from the headset.

NOTE: Either a headset speaker or an external speaker can be used; The SPEAKER volume is for adjusting the volume of both a headset speaker and an external speaker.

Headset Side tone Up and Down

You can adjust headset sidetone volume by selecting SIDETONE under the VOLUME menu. Use UP or DOWN to adjust headset sidetone volume.

Volume Up Adjustment: Every time you press and release the volume up button, a beep will be heard from the headset as increased volume. When maximum volume is reached, "maximum" will be heard from the headset.

Volume Down Adjustment: Every time you press and release of the volume down button, a beep will be heard from the headset as decreased volume. When minimum volume is reached, "minimum" will be heard from the headset.

Headset Microphone Gain Up/Down

To adjust the headset microphone gain, move to and press SET to select MIC under the VOLUME menu, and then press UP or DOWN as needed.

Microphone Gain Up Adjustment: Every time you press and release the volume up button, adjusted voice will be heard from the headset as increased volume while you are speaking to headset microphone. When maximum gain is reached, a voice message "maximum" will be heard in the headset.

Microphone Gain Down Adjustment: Every time you press and release the volume up button, adjusted Voice will be heard from the headset as decreased volume while you are speaking to headset microphone. When minimum gain is reached, a voice message "minimum" will be heard in the headset.

Auxiliary Input and Output Volume Up/Down

You can adjust auxiliary input and output level by selecting AUXin and AUXout each under the VOLUME menu. Use UP or DOWN to adjust the auxiliary input and output level.

Input or Output Volume Up Adjustment: Every time you press and release the volume up button, a beep will be heard from the headset as increased level. When maximum level is reached, "maximum" will be heard from the headset.

Input or Output Volume Down Adjustment: Every time you press and release the volume down button, a beep will be heard from the headset as decreased level. When minimum level is reached, "minimum" will be heard from the headset.

NOTE: HEADSET SAFETY

Please note that there may be plenty of root causes of distortion, echo or cut-off on microphone sounds of headset. At the initial set up, for the safe use, it is encouraged to set these values lower rather than higher and adjust for the best values or improve matters caused by the relevant headset where applicable.

● When the microphone gain, side tone or speaker volume on a specific headset is set too high, it is possibly cause a kind of echo or distortion. Try to these gain or volume down for improving and mitigate the relevant matter.

● When the microphone gain, side tone or speaker volume on a specific headset is set too low, it is possibly clip off the first part of words or the talk may not be audible to others. Try to these gain or volume up for improving and mitigate the relevant matter.

Software in the Base Station may adjust or improve the matter but, it is constrained to replace the headset if the relevant matter is not improved.

MONITOR Menu

Move to and press SET to select MONITOR then, MONITOR menu appears as shown in Figure 4-6:
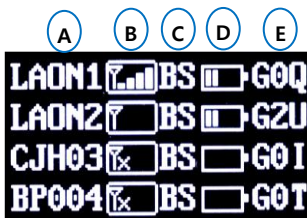
Figure 4-6. MONITOR menu

The MONITOR menu shows each Belt Pack is connected to which Remote Base Station or Base Station. Also you can monitor each Belt Pack's RSSI, battery and microphone gain levels at the same time. The display shows the status up to 32 Belt Packs with which have been paired up in the normal mode by pairing order. Additional Belt Packs with which have been paired up in the shared mode cannot be monitored at the Base Station.

The item **A** indicates the Label of each Belt Pack. The item **B** indicates the Received Signal Strength Indication (RSSI) level of each Belt Pack. The RSSI level is presented graphically. The item **C** indicates the Belt Pack is connected to which Remote Base Station or Base Station. If the Belt Pack is connected to the Base Station, "BS" will appear. If the Belt Pack is connected to the Remote Base Station, "R1" will appear. When the Belt Pack is not connected to any of the Remote Base Station or Base Station, the display shows a message "NC". The item **D** indicates the battery level of each Belt Pack. The battery level is presented graphically. The item **E** indicates the headset microphone gain of each Belt Pack. The number next to "G" stands for the number of the microphone gain '1' through '5'.

You can scroll with UP or DOWN button, and move with LEFT or RIGHT button. Move to and press SET to select QUIT, or press SET for 2 seconds to return to the MAIN menu.

UNLATCH Menu

Move to and press SET to select UNLATCH then the UNLATCH menu appears as shown in Figure 4-7:

When you unlatch the transmissions of the Belt Pack, use this UNLATCH menu. The Base Station operator use the UNLATCH menu to stop the transmission of the Belt Packs that are used in hands-free-on mode or Push-to-Talk mode.
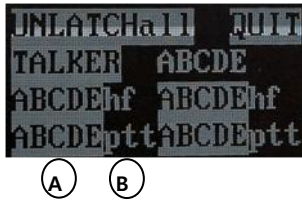
Figure 4-7. UNLATCH menu

Each Base Station can have up to nine (9) full-duplex audio paths – eight (8) channels for Belt Pack and 1 (one) channel for Base Station. The display shows up to eight (8) Belt Pack Labels that are transmitting to the Base Station or the Remote Base Station. Under the UNLATCH menu, move to and select UNLATCH all, all transmissions of the Belt Pack are unlatched. If all transmissions of the Belt Pack are unlatched successfully, the display shows only "QUIT" item and "UNLATCH Completed" message on the second row. When you press SET to select TALKER, a current or most recently used Belt Pack will be unlatched. If a transmission of the current or most recently used Belt Pack is unlatched successfully, "TALKER" item and its Belt Pack Label will disappear from the UNLATCH menu. The item **A** represents the Belt Pack Label. The item **B** indicates the status of the Belt Pack that is in hands-Free-On or push-to-talk mode operation. The "hf" stands for the Belt Pack in hands-free-on mode operation. The "ptt" stands for the Belt Pack in push-to-talk mode operation. Move to and press SET to select each Belt Pack Label, then a transmission of the selected Belt Pack is unlatched. If a transmission of the selected Belt Pack is unlatched successfully, selected Belt Pack Label and its status will disappear from the UNLATCH menu.

You can scroll with UP or DOWN, and move with LEFT or RIGHT button. Move to and select QUIT or press SET for 2 seconds to return to the MAIN menu.

BELTPACK, RBS and BS Menu

See the "**BP550 BELT PACK SETUP AND PAIRING UP**" and "**ADDITIONAL DEVICES SETUP**" in SECTION 3 for details.

VOICE MESSAGE IN THE HEADSET OF THE BASE STATION

- "Beep"
- "Maximum"
- "Minimum"

- "Group one", "Group two", "Group three"
- "Group all"

FREQUENCY BAND

The following table 4-1. lists the frequencies being used in 5GHz UNII band. The ID of frequency bands currently being used will be shown on the BS menu. The LT250 system which operates in 5GHz is approved for license free use in most countries. However, some countries may restrict the use of some band or RF spectrum operations. Therefore, it is your responsibility to find out whether the LT250 system is permitted in your country or not.

ID of frequency bands	Channel	Frequencies	Width	USA	Europe	Japan	Korea
01	52	5260MHz	20MHz	O	O	O	X
02	56	5280MHz	20MHz	O	O	O	O
03	60	5300MHz	20MHz	O	O	O	O
04	64	5320MHz	20MHz	O	O	O	O
05	100	5500MHz	20MHz	O	O	O	O
06	104	5520MHz	20MHz	O	O	O	O
07	108	5540MHz	20MHz	O	O	O	O
08	112	5560MHz	20MHz	O	O	O	O
09	116	5580MHz	20MHz	O	O	O	O
10	120	5600MHz	20MHz	X	O	O	O
11	124	5620MHz	20MHz	X	O	O	O
12	128	5640MHz	20MHz	X	O	O	X
13	132	5660MHz	20MHz	X	O	O	X
14	136	5680MHz	20MHz	O	O	O	X
15	140	5700MHz	20MHz	O	O	O	X
16	149	5745MHz	20MHz	O	X	X	O
17	153	5765MHz	20MHz	O	X	X	O
18	157	5785MHz	20MHz	O	X	X	O
19	161	5805MHz	20MHz	O	X	X	O
20	165	5825MHz	20MHz	O	X	X	O

Table 4-1. Frequencies being used in 5GHz UNII band

BP250 BELT PACK OPERATION
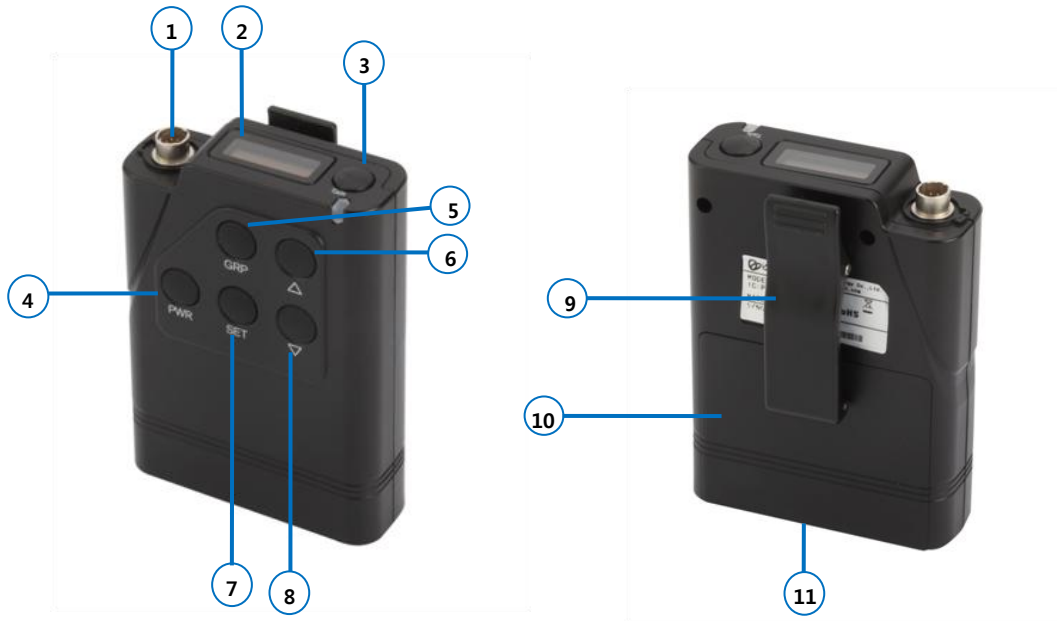
POWER ON/OFF

Power On

Press and release the PWR (power) button (#4). A voice message "Power on" will be heard in the headset, and the red TALK light adjacent to the TALK button will go on. After a few seconds, TALK light will be changed to green slow flashing, indicating the Belt Pack is ready to use. The pairing status on the NORMAL menu of the Base Station will count up this connection.

Power Off

Press and hold the PWR button for approximately two seconds. A voice message "Power off" will be heard in the headset and then the green slow flashing TALK light will go off.

NOTE 1: During the Belt Pack's transmitting, the green TALK light will be on steady. The green TALK light will be on slow flashing when the Belt Pack is ready for receiving the audio but not transmitting. When Belt Pack is not connected to a Base Station, TALK light will be changed to red rapid flashing.

NOTE 2: When batteries become weak, a voice message "Change battery" will be heard in the headset.

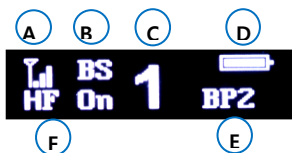## NORMAL MENU ON THE BELT PACK'S UPPER PANEL DISPLAY

Figure 4-8. NORMAL menu

The item **A** indicates the Belt Pack's Received Signal Strength Indication (RSSI) level. The RSSI level is presented graphically.

The item **B** indicates the Belt Pack is connected to which Remote Base Station or Base Station. When the Belt Pack is connected to the Base Station, "BS" will be shown. When the Belt Pack is connected to the Remote Base Station, "R1" will be shown.

The item **C** indicates the Communication Group of the Belt Pack's headset. The numbers "1" through "3" stand for the number of the Communication Groups.

The item **D** indicates the Belt Pack's battery level. The battery level is presented graphically.

The item **E** indicates the Belt Pack's label.

The item **F** indicates Belt Pack's operation mode. If the headset of Belt Pack is in the hands-free-on mode operation, "HF on" appears on the display. If the headset of Belt Pack is in the push-to-talk (Hands Free off) mode operation, "HF off" appears on the display.

TALK AND BELTPACK COMMUNICATION GROUP BUTTONS

Belt Pack Communication Group Button (#5)

Up to three (3) communication groups, single or multiple, can be allocated and configured flexibly to Belt Pack by the Base Station operator using the 'LABEL/GROUP/PAIR' menu under the 'BELTPACK' menu of the Base Station. For example, a Belt Pack may belong to only one communication group of the group # 1, two communication groups of the group # 1 & 2 and three communication groups of the group # 1, 2 & 3.

Belt Packs in the same communication group can talk with others in the designated group. Communication Groups of the Belt Pack is set to "1" (Group 1) by the factory default. To select Communication Group on the Belt Pack, press and release the Communication Group button (#5) on the front panel of the Belt Pack. It will be changed sequentially by each pressing, from "1" to "3" within the allocated Communication Groups by the Base Station operator. Every time you press and release the Communication Group button, a voice message "Group # ("One" through "three") will be heard from the headset. The selected Communication Group is displayed on the NORMAL menu of the Belt Pack, as following examples.

"1" : Belt Pack's Communication Group is selected to "1":
"3" : Belt Pack's Communication Group is selected to "3".

If you select a Belt Pack's Communication Group same as that of auxiliary input/output, the headset of the Belt Pack should be able to hear audio from the auxiliary device and the auxiliary device should be able to hear audio from the headset of the Belt Pack.

NOTE: Belt Packs under the shared mode are allocated to Communication Group "3" automatically, and it cannot be allocated to other Communication Groups.

TALK Button (#3)

Push-To-Talk (hand-free off) Mode Setting

You can set Belt Pack Push-To-Talk (PTT) communication in the "Hands Free" menu. A voice message "Hands free off" will be heard in the headset.

NOTE: After setting the PTT mode, hands-free-on mode is disabled until it is changed to hands-free-on mode. Belt Packs under the shared mode are only operated in PTT operation.

Push-To-Talk (hand-free off) Mode Operation

Press and hold the TALK button. In PTT operation, audio will be transmitted only while you are pressing the TALK button.

Hands-Free-On Mode Setting

You can set Belt Pack for hands-free-on ("HFon") communication in the "Hands Free" Menu. A voice message "Hands free on" will be heard in the headset.

Hands-Free-On Mode Operation:

Quickly press and release the TALK button to latch the transmission. After latching the transmission, talk and listen work as in normal telephone conversation. Quickly press and release the TALK button again to stop the transmission, and you can listen only.

TALK Light

When the Belt Pack is transmitting, the light on top of the TALK button should be on steady. When the Belt Pack is ready but not transmitting, that is listen only status, the light on top of the TALK button should be flashing slowly. When the Belt Pack is not ready for transmitting the audio, the light on top of the TALK button should be flashing red rapidly.

HOW TO CONTROL MENUS

MAIN Menu

Press any button of the front panel on display off status, then the 'NORMAL' menu appears.
Press SET button under the NORMAL menu, then the MAIN menu appears as shown in Figure 4-9.

Figure 4-9. MAIN menu

The item **A** indicates the Belt Pack's Label.
The item **B** indicates the Belt Pack's model, software version and ID number.
In the MAIN menu, press SET to back to NORMAL menu.
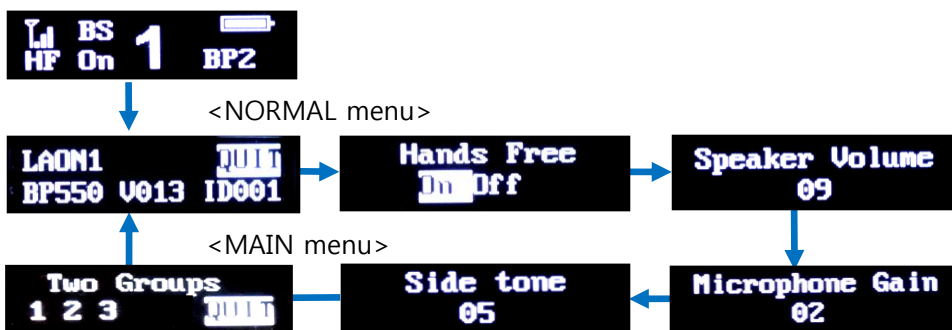
Figure 4-10. Menus shown sequentially

Under the MAIN menu with UP or DOWN button, move to each one of HANDS FREE, SPEAKER VOLUME, MICROPHONE GAIN and SIDETONE VOLUME, TWO GROUPS menus sequentially and select a menu by pressing SET button. The selected menu will be flashing and ready for change. Use UP or DOWN button to change values or toggle it to on or off. Press SET to save values and move to next field. Quick pressing and releasing Power button will lead you to NORMAL menu directly.

HANDS FREE Menu

Figure 4-11. HANDS FREE menu

Move to HANDS FREE menu, and press SET button to select and toggle it to On or Off with UP or DOWN button. If a Belt Pack is in shared mode, there is no option to select Hands Free On mode and it only operates in "Off" mode.

SPEAKER Volume Menu

Figure 4-12. SPEAKER VOLUME menu

Move to SPEAKER VOLUME menu, press SET button to select and adjust headset speaker volume with UP or DOWN button. And also press UP or DOWN button under the NORMAL menu or screen off status will lead you to speaker volume control directly.

Speaker Volume Up Adjustment: Every time you press and release the volume up button, a beep will be heard from the headset as increased volume. When maximum volume is reached, "maximum" will be heard from the headset.

Speaker Volume Down Adjustment: Every time you press and release of the volume down button, a beep will be heard from the headset as decreased volume. When minimum volume is reached, "minimum" will be heard from the headset.

MICROPHONE GAIN Menu

Figure 4-13. MICROPHONE GAIN menu

Move to MICROPHONE GAIN menu, press SET button to select and adjust headset microphone gain with UP or DOWN button.

Microphone Gain Up Adjustment: Every time you press and release the volume up button, adjusted Voice will be heard from the headset as increased volume while you are speaking to headset microphone. When maximum gain is reached, a voice message "maximum" will be heard in the headset.

Microphone Gain Down Adjustment: Every time you press and release the volume down button, adjusted Voice will be heard from the headset as decreased volume while you are speaking to headset microphone.   When minimum gain is reached, a voice message "minimum" will be heard in the headset.

SIDETONE Menu

Figure 4-14. SIDE TONE menu

Move to SIDE TONE menu, press SET button to select and adjust headset sidetone volume with UP or DOWN button.

SIDETONE Up Adjustment: Every time you press and release the volume up button, a beep will be heard from the headset as increased volume. When maximum volume is reached, "maximum" will be heard from the headset.

SIDETONE DOWN Adjustment: Every time you press and release the volume down button, a beep will be heard from the headset as decreased volume. When minimum volume is reached, "minimum" will be heard from the headset.

NOTE: HEADSET SAFETY

Please note that there may be plenty of root causes of distortion, echo or cut-off on microphone sounds of headset. At the initial set up, for the safe use, it is encouraged to set these values lower rather than higher and adjust for the best values or improve matters caused by the relevant headset where applicable.

- When the microphone gain, side tone or speaker volume on a specific headset is set too high, it is possibly cause a kind of echo or distortion. Try to these gain or volume down for improving and mitigate the relevant matter.
- When the microphone gain, side tone or speaker volume on a specific headset is set too low, it is possibly clip off the first part of words or the talk may not be audible to others. Try to these gain or volume up for improving and mitigate the relevant matter.

Software in the Belt Pack may adjust or improve the matter but, it is constrained to replace the headset if the relevant matter is not improved.

TWO GROUPS Menu

Figure 4-15. TWO GROUPS menu

'TWO GROUPS' menu is to set a 'simultaneous listening mode' for selected two groups within the allocated group channels to the Belt Pack. Once the 'TWO GROUPS' mode is set, the Belt Pack user can only select the two groups with the communication group selection button (#5, 'GRP') on the front panel of the Belt Pack. And, only one selected group with the communication group selection button (#5, 'GRP') is allowed for 'Listen & Talk mode' within the two groups.

Move to the 'TWO GROUPS' menu and press 'SET' to enter into the edit mode. Move to the desired communication group number to select by pressing 'UP' or 'DOWN' button and press 'SET' on the number. Then the communication group number will be reversed and set. On the 'TWO GROUPS' menu screen, only the allocated communication group numbers to the Belt Pack will be displayed. And, selecting two (2) groups is necessary for the 'two groups listening' function. Otherwise, the set value will not be saved. To reset the groups, reverse all the set values and reset. Move to 'QUIT' on the menu with 'UP' or 'DOWN' button and press 'SET' to save. To release the 'two groups listening' mode, reverse all the set values in the menu.

NOTE 1: If a Belt Pack is in shared mode, the Communication Group will be allocated as "3" automatically for the Belt Pack and the available Communication Group for the Belt Pack is only one group, "3".

NOTE 2: If no action is taken for 10 seconds on any menu, all changes made will be saved automatically and the display will be off - except 'TWO GROUPS' menu.

CHANGE BATTERIES

When Batteries become weak, a voice message "Change battery" will be heard in the headset. When this happens, open the battery cover by sliding down, and remove batteries from the Belt Pack. The removable battery sled will hold two 1.5v alkaline batteries. When you use two alkaline batteries, insert two 1.5v alkaline batteries into the battery sled, and put it in the battery holder. When replacing a battery, make sure the position of polarity (+, -) is correct. To remove the battery pack from the Belt Pack, pull up on top of the battery pack and lift the battery pack out of the Belt Pack. And replace it with a fully charged battery pack.

VOICE MESSAGE IN THE HEADSET OF THE BELT PACT

- "Power on"
- "Power off"
- "Hands free on"
- "hands free off"
- "Beep"
- "Maximum"

- "Minimum"
- "Audio channel is busy"
- "Unlatched"
- "Change battery"
- "Out of coverage "
- "Group one", "Group two", "Group three"

SECTION 5: FAQS AND TROUBLESHOOTING

BASE STATION

Limited RF coverage
- Ensure that the antennas are properly connected and tightened on the Base Station.
- Confirm the antennas are positioned vertically and be folded completely as 90 degree.
- Check around the Base Station's line-of-sight and ensure that there are no physical obstructions around. While attaching the antennas directly to the rear panel of the Base Station, the Base Station should be away from any metal obstructions, walls, and electronic equipments that can create radio interference. If possible, the antenna should be located as high as possible and away from obstructions and select location to the center of the coverage. The antenna extension cable enables an antenna to be mounted away from the Base Station to improve antenna coverage.

TALK light on the Base Station does not come on
- Make sure that the power cords are properly plugged to the Base Station and standard wall outlet.
- Confirm that the POWER switch on the rear panel of the Base Station is turned on.

BELT PACK

Belt Pack TALK light do not turn on green and "out of coverage" is heard in the headset.
- Confirm that the POWER switch is turned on and ensure that the battery is fully charged.
- Turn off and on the power of the Belt Pack and Base Station again.
- Check out the coverage. You may be too far from the Base Station or the Remote Base Station. The coverage can be varied with the layout such as physical obstructions around the Base Station's line-of-sight.

Cannot hear one or more channels
- Confirm that the POWER switch on the rear panel of the Base Station is turned on.
- Make sure that the headset is firmly connected to the Belt Pack or the Base Station.
- Check if you are holding the TALK button on the Belt Pack or the Base Station.
- Ensure that the appropriate Communication Group is selected.

No audio passing between a Base Station and a Belt Pack
- Make sure that you have paired up a Belt Pack with the appropriate Base Station.

REMOTE BASE STATION

Limited RF coverage

● Ensure that the antennas are properly connected and tightened on the Remote Base Station.

● Reflected RF signals could occur in an environment with a number of reflective surfaces, such as metal obstructions, walls or other large structures, and electronic equipments that can create radio interference. You can relocate the Remote Base Station antenna to avoid the reflective surface. If possible, you can adjust the antenna as high as possible and away from any reflective obstructions and relocate them to the center of the coverage. The antenna extension cable allows an antenna to be mounted away from the Remote Base Station to improve antenna coverage.

The communication with Belt Pack is not available in the Remote Base Station's coverage

● Make sure that you have paired up a Remote Base Station with the appropriate Base Station.

● Check out the RBS LINK light on the front panel of the Base Station and BS LINK light on the front panel of the Remote Base Station are on.

● If LINK lights are not on, check the Base Station's RJ-45 connector and Remote Base Station's RJ-45 connector are properly wired to the network switch. Ensure that the network switch is working well.

● If the power light on the front panel of the Remote Base Station is off; check the power cord is firmly connected or the POE network switch is working well.

SECTION 6: TECHNICAL SPECFICATIONS

LT250 SYSTEM SPECIFICATIONS

BS250 BASE STATION

RF Frequency:	UNII band: 5.26GHz~5.32GHz, 5.50GHz~5.70GHz, 5.745GHz~5.805GHz
Antenna Connector Type:	External $^1/_2$ -wave dipole, SMA connector
Transmitter	
Type:	Frequency/Time Diversity
Transmit Power:	160mW
Modulation Type:	QPSK
Frequency Stability:	± 20ppm
Receiver	
Type:	Antenna/Frequency/Time Diversity
RF Sensitivity:	-80dBm or less
Frequency Stability:	± 20ppm
Belt Packs per Base station:	Inherently, thirty two (32) Belt Packs can be paired up in the normal mode, and eight (8) Belt Packs operating in full-duplex (talk/listen) at the same time while up to nine (9) full-duplex audio channel is provided including Base Station. Additionally, up to ninety six (96) Belt Packs under the shared mode can be paired up, and operate in Push-to-talk
Audio Communication Group:	operation.
Audio Frequency Response:	Three (3)
Audio Dynamic Range:	200 Hz to 3.5 kHz with proprietary audio voice shaping
Headset output:	>70dB or more
Microphone Type:	50mW into 32 Ohm
Headset Connector:	Dynamic or Electret
Latency:	6-pin mini-DIN male
Communication Security:	One-way system latency less than 23ms direct
	256 bits key AES level 3 Encryption
Auxiliary Input:	
Auxiliary output:	XLR-3F/$^1/_4$"(6:35mm) combo jack, 600Ω balanced, level adjustable
8Ω Speaker Output:	XLR-3M, 600Ω balanced, level adjustable
LAN RJ-45 Connector:	1W into 8Ω
USB Connector :	One (CAT-5 standard wiring), A Remote Base Station can be connected via LAN.
	Program port
Front Panel Display:	
Front Panel Button:	OLED 128 x 64 Resolutions
	Touch buttons
Power Input:	
Operating Temperature:	100-240VAC, 47-63Hz, 11.4-12.6VDC
Dimensions:	0 °C to 50°C (32°F to 122°F)
	8.26W x 6.37L x 1.73H inch (21W x 16.2L x 4.4H cm),
Weight:	Without Connector on the Rear panel and foot.
	2.4118 lbs (1094g)

BP250 BELT PACK

RF Frequency:	UNII band: 5.26GHz~5.32GHz, 5.50GHz~5.70GHz, 5.745GHz~5.805GHz
Antenna Connector Type:	Internal

Transmitter

Type:	Frequency/Time Diversity
Transmit Power:	125mW
Modulation Type:	QPSK
Frequency Stability:	± 20ppm

Receiver

Type:	Antenna/Frequency/Time Diversity
RF Sensitivity:	-80dBm or less
Frequency Stability:	± 20ppm

Audio Communication Group:	Three (3)
Audio Frequency Response:	200 Hz to 3.5 kHz with proprietary audio voice shaping
Audio Dynamic Range:	>70dB or more
Headset output:	50mW into 32 Ohm
Microphone Type:	Dynamic or Electret
Headset Connector:	6-pin mini-DIN male
Latency:	One-way system latency less than 23ms direct
Communication Security:	256 bits key AES level 3 Encryption

Display:	OLED 128 x 64 Resolutions
Button:	Push buttons
Battery Requirement:	2.4V 2700mA Rechargeable NiMH Battery or Two AA size 1.5v alkaline batteries
Battery life:	Ten (10) hours in hands free mode

Operating Temperature:	0°C to 50°C (32°F to 122°F)
Dimensions:	2.89W x 0.92L x 3.83H inch (7.35W x 2.35L x 9.73H cm) without Belt Clip
Weight:	0.445 lbs (202g) with battery / 0.29 lbs (133g) without battery

RBS25 REMOTE BASE STATION

RF Frequency:	UNII band: 5.26GHz~5.32GHz, 5.50GHz~5.70GHz, 5.745GHz~5.805GHz
Antenna Connector Type:	External $^1/_2$ -wave dipole, SMA connector

Transmitter

Type:	Frequency/Time Diversity
Transmit Power:	125mw
Modulation Type:	QPSK
Frequency Stability:	± 20ppm

Receiver

Type:	Antenna/Frequency/Time Diversity
RF Sensitivity:	- 80dBm or less
Frequency Stability:	± 20ppm

LAN RJ-45 Connector:	One (CAT-5 standard wiring) , Connect to the Base Station via LAN.
USB Connector :	Program Port

Power Input:	100-240VAC, 47-63Hz, 11.4-12.6VDC or POE from the Network Switch

|	
Operating Temperature:	0°C to 50°C (32°F to 122°F)
Dimensions:	3.46W x 1.47L x 4.80H inch (8.8W x 3.74L x 12.2H cm) without Pouch
Weight:	0.831 lbs (377g) without battery and pouch

FACTORY DEFAULT SETTING AND RECOMMENDATION

| Item	Base Station default	Belt Pack default	Recommendation
Microphone gain	5	5	
Speaker volume	8	8	
Sidetone volume	8	8	Same as Speaker volume
Communication Group Allocation	1, 2, 3 (All)	1, 2, 3 (All)	
Communication Group Selection	1	1	
'TALK' button	Unlatched	Unlatched	
Hands free mode	On	On	
Auxiliary In/Out connection On/Off	Off	NA	
Auxiliary In/Out volume	8	NA	

6-PIN HEADSET CABLE CONNECTOR
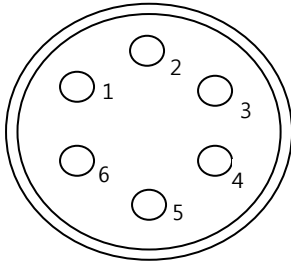
1. MIC VCC +2V
2. MIC -
3. MIC +
4. MIC VCC +5V
5. RECEIVER -
6. RECEIVER +

WALL-MOUNT BRACKET INSTALLATION

To expand your choice of convenient locations for the Base Station, wall-mount bracket kit is available as an optional accessory. The wall-mount bracket kit comprises three accessories, one wall-mount bracket, four mounting screws for wall-mount bracket and two loop screws for Base Station as shown in the Figure 5-1. You may need other tools to drill holes for the mounting screws on the wall and mount the bracket properly. Consider choosing the proper tools such as eye protection for drilling, electric drill, screwdriver and etc in accordance with the location and environment you have chosen.

Mounting screws for wall bracket (4ea)

Plastic anchor bolts (4ea)

Loop screws for Base Station (2ea)

Wall-mount bracket

Figure 5-1. Wall-mount bracket kit
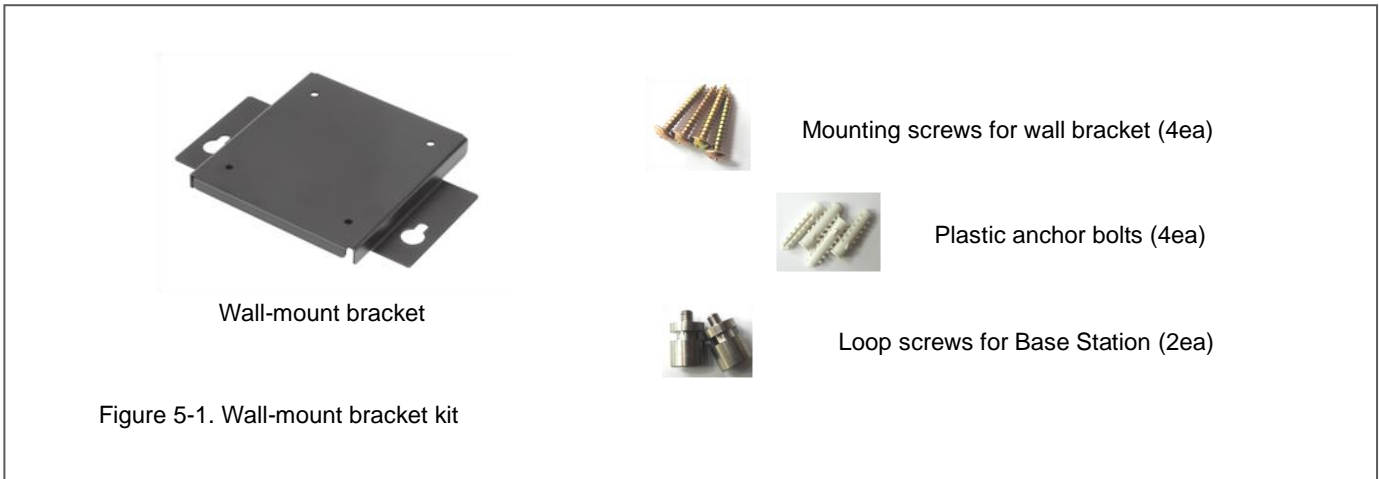
Step 1. Unpack the wall-mount bracket kit and ensure all the four items are enclosed. Using the proper supplied accessories is critical to a safe and solid installation and durability.

Step 2. Decide the location where to mount the bracket.

WARNIG!

Do not use the wall-mount bracket other than the purpose that it is intended.

Do not expose or mount the bracket above or near an appliance that produces heat.

Do not mount on surface that have hazards concealed behind them such as electrical wiring, conduits or plumbing.

Mount the bracket on vertical or horizontal surface only and all other safety cautions are required to follow.

Step 3. Put the wall-mount bracket on the wall as shown in the Figure 5-2 to mark the location of the holes. The bracket surface with four **(A)** holes should be direct attached to the wall and two **(B)** holes should be shown on the upper side of the bracket. Mark four drill holes for mounting screws on the wall with a pencil.
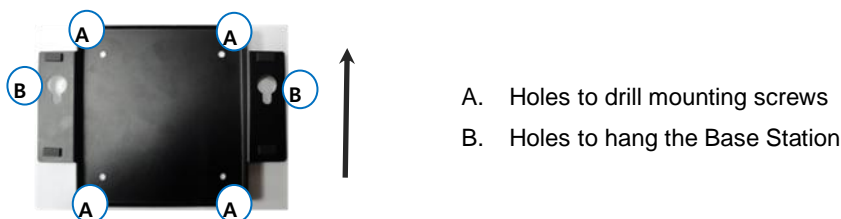

A. Holes to drill mounting screws
B. Holes to hang the Base Station

Figure 5-2. Wall-mount bracket on a wall

Step 4. Drill the four holes and insert four plastic anchor bolts each into the holes.

Step 5. Put the wall-mount bracket again on the wall. As shown from the Figure 5-3, drill and tighten four mounting screws into the plastic anchor bolts through the bracket holes while putting it on the wall.
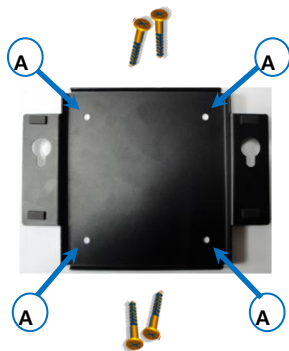

Figure 5-3. Drill mounting screws to the holes

WARNIG!

While using tools to drill holes, use eye protection and ensure to observe all precautions.

Step 6. Insert and tighten the two loop screws into the holes on the bottom of the Base Station as shown from the Figure 5-4.
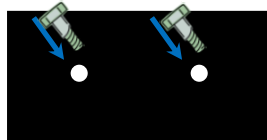

Figure 5-4. Assemble screws for Base Station

Step 7. Hang the Base Station on the wall-mount bracket by putting the two loop screws on the bottom of the Base Station into the two **(B)** holes on the wall-mount bracket. Make sure the rear panel of the Base Station side up and the front panel side down.